EMERGENCY FLOOD CONTROL

UNIVERSITY
OF MICHIGAN
MAY 9 - 1956
MAIN
READING ROOM

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE
COMMITTEE ON PUBLIC WORKS
UNITED STATES SENATE

EIGHTY-FOURTH CONGRESS

SECOND SESSION

ON

S. 2853

A BILL TO AUTHORIZE THE CONSTRUCTION OF FLOOD PROTECTION MEASURES, WITH PARTICULAR REFERENCE TO AREAS WHERE SEVERE DAMAGES HAVE RECENTLY OCCURRED AS THE RESULT OF EXTREME RAINFALL

S. 3272

A BILL TO INCREASE AND MAKE CERTAIN REVISIONS IN THE GENERAL AUTHORIZATION FOR SMALL FLOOD-CONTROL PROJECTS IN THE FLOOD CONTROL ACT OF 1948

S. 3273

A BILL TO PROVIDE AUTHORIZATION FOR EMERGENCY FLOOD PROTECTION PROJECTS IN AREAS OF THE UNITED STATES WHERE SUCH PROJECTS ARE NEEDED FOR THE PROTECTION OF LIFE AND PROPERTY

S. 3469

A BILL TO INCREASE AND REVISE THE AUTHORIZATION FOR SMALL FLOOD-CONTROL PROJECTS IN SECTION 205 OF THE FLOOD CONTROL ACT OF JUNE 30, 1948, ETC.

MARCH 22 AND 29, 1956

Printed for the use of the Committee on Public Works

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DEPOSITED BY THE
UNITED STATES OF AMERICA

EMERGENCY FLOOD CONTROL

THURSDAY, MARCH 22, 1956

UNITED STATES SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON FLOOD CONTROL—RIVERS AND HARBORS,
Washington, D. C.

The subcommittee met, pursuant to adjournment, at 12:05 p. m., in room 412, Senate Office Building, the Honorable Robert S. Kerr presiding.

Present: Senators Kerr (presiding) and Bush.

Senator KERR. We have before us today the following bills: S. 3272, S. 3273, S. 2853, and S. 3469.

S. 3272, a bill to increase and make certain revisions in the general authorization for small flood-control projects in the Flood Control Act of 1948.

S. 3273, a bill to provide authorization for emergency flood protection projects in areas of the United States where such projects are needed for the protection of life and property.

S. 2853, a bill to authorize the construction of flood-protection measures, with particular reference to areas where severe damages have recently occurred as the result of extreme rainfall accompanying hurricane storms.

S. 3469, a bill to increase and revise the authorization for small flood-control projects in section 205 of the Flood Control Act of June 30, 1948, as amended by section 212 of the Flood Control Act of May 17, 1950; and to extend such authorization to bank protection projects.

(The above-mentioned bills are as follows:)

[S. 3272, 84th Cong., 2d sess.]

A BILL To increase and make certain revisions in the general authorization for small flood control projects in the Flood Control Act of 1948

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 205 of the Flood Control Act of 1948 is amended to read as follows:

"SEC. 205. (a) The Secretary of the Army is hereby authorized to allot, from any appropriations heretofore or hereafter made for flood control, not to exceed $15,000,000 for any one fiscal year for the construction of flood control projects not specifically authorized by law when, in the opinion of the Chief of Engineers, such work is warranted, subject to the following conditions:

"(1) Not more than $500,000 shall be allotted for this purpose for any single project for expenditure during any one fiscal year;

"(2) The provisions of local cooperation specified in section 3 of the Flood Control Act of June 22, 1936, as amended, shall apply;

"(3) Concurrence shall be obtained from the affected State or political subdivision, or both, prior to the commencement of construction of each proposed project; and

"(4) The work shall be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation except

as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey reports.

"(b) (1) Before work is initiated under this section on any flood control project or other flood protective measure which the Secretary of the Army estimates will cost in excess of $150,000 for any one fiscal year, he shall submit to the Committee on Public Works of the Senate and the Committee on Public Works of the House of Representatives a report outlining the proposed plan of protection together with an analysis of the justification therefor. The report shall be delivered to both committees on the same day and while each House is in session. No work shall be initiated on any project or other measure with respect to which such a report is made until the expiration of the first period of thirty calendar days, of continuous session of the Congress, following the date on which the report is transmitted to the committees.

"(2) For purposes of paragraph (1)—

"(A) continuity of session shall be considered as broken only by an adjournment of the Congress sine die; but

"(B) in the computation of the thirty-day period there shall be excluded the days on which either House is not in session because of an adjournment of more than three days to a day certain."

[S. 3273, 84th Cong., 2d sess.]

A BILL To provide authorization for emergency flood-protection projects in areas of the United States where such projects are needed for the protection of life and property

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) in view of the urgent need for the immediate construction in many areas of the United States of flood-protective works which otherwise might be unduly delayed awaiting investigation and authorization under regularly established procedures, the Chief of Engineers under the direction of the Secretary of the Army may accomplish flood-protective projects not specifically authorized by law in any area of the United States where, in the opinion of the Secretary of the Army and the Chief of Engineers, such projects are necessary and should be accomplished without delay for the protection of life and property. Flood-protective projects initiated under this Act shall be subject to the conditions specified in sections 2 and 3 of this Act.

(b) The authority provided in this Act shall be in addition to that provided in section 205 of the Flood Control Act of 1948, as amended.

(c) No expenditures shall be made under the authority of this Act after June 30, 1960.

SEC. 2. The Secretary of the Army is hereby authorized to allot, from any appropriations heretofore or hereafter made for flood control, not to exceed $20,000,000 for any one fiscal year for the construction of flood-protective projects under the provisions of this Act. Such construction shall be subject to the following conditions:

(1) Not more than $500,000 shall be allotted for any single project for expenditure during any one fiscal year;

(2) The provisions of local cooperation specified in section 3 of the Flood Control Act of June 22, 1936, as amended, shall apply to such projects;

(3) Concurrence shall be obtained from the affected State or political subdivision, or both, prior to the commencement of construction of each proposed project; and

(4) The work in each project shall be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation except as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey reports.

SEC. 3. (a) Before work is initiated under this Act on any flood-protective project which the Secretary of the Army estimates will cost in excess of $150,000 for any one fiscal year, he shall submit to the Committee on Public Works of the Senate and the Committee on Public Works of the House of Representatives a report outlining the proposed plan of protection together with an analysis of the justification therefor. The report shall be delivered to both committees on the same day and while each House is in session. No work shall be initiated on any project or other measure with respect to which such a report is made until the

expiration of the first period of thirty calendar days, of continuous session of the Congress, following the date on which the report is transmitted to the committees.

(b) For purposes of subsection (a)—

(1) continuity of session shall be considered as broken only by an adjournment of the Congress sine die; but

(2) in the computation of the thirty-day period there shall be excluded the days on which either House is not in session because of an adjournment of more than three days to a day certain.

[S. 2853, 84th Cong., 2d sess.]

A BILL To authorize the construction of flood-protection measures, with particular reference to areas where severe damages have recently occurred as the result of extreme rainfall accompanying hurricane storms

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) in view of the extraordinary floods, of a type and intensity heretofore rarely experienced in New England, which have resulted from the occurrence of hurricane storms, and in view of the loss of life and extreme damage to industrial, commercial, and residential property from these storms, and in view of the urgent need for the immediate construction of flood protective works which otherwise might be unduly delayed awaiting investigation and authorization under regularly established procedures, the Chief of Engineers under the direction of the Secretary of the Army shall accomplish flood protective measures not specifically authorized by law along the Byram, Delaware, Housatonic, Farmington, Mianus, Norwalk, Rippowam, Thames, and Blackstone Rivers and other rivers in New England, Pennsylvania, and New York where, in the opinion of the Secretary of the Army and the Chief of Engineers, such measures are warranted. Flood protective measures initiated under this subsection shall be subject to the conditions specified in section 2 of this Act.

(b) No expenditures shall be made under the authority of this section after June 30, 1960.

SEC. 2. The Secretary of the Army is hereby authorized to allot, from any appropriations heretofore or hereafter made for flood control, not to exceed $10,000,000 for any one fiscal year for the construction of flood-control projects not specifically authorized by law when, in the opinion of the Chief of Engineers, such work is warranted, subject to the following conditions:

(1) Not more than $500,000 shall be allotted for this purpose for any single project for expenditure during any one fiscal year;

(2) The provisions of local cooperation specified in section 3 of the Flood Control Act of June 22, 1936, as amended, shall apply;

(3) Concurrence shall be obtained from the affected State or political subdivision, or both, prior to the commencement of construction of each proposed project; and

(4) The work shall be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation except as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey reports.

SEC. 3. (a) Before work is initiated under this Act on any flood control project or other flood protective measure which the Secretary of the Army estimate will cost in excess of $150,000 for any one fiscal year, he shall submit to the Committee on Public Works of the Senate and the Committee on Public Works of the House of Representatives a report outlining the proposed plan of protection together with an analysis of the justification therefor. The report shall be delivered to both committees on the same day and while each House is in session. No work shall be initiated on any project or other measure with respect to which such a report is made until the expiration of the first period of thirty calendar days, of continuous session of the Congress, following the date on which the report is transmitted to the committees.

(b) For purposes of subsection (a)—

(1) continuity of session shall be considered as broken only by an adjournment of the Congress sine die; but

(2) in the computation of the thirty-day period there shall be excluded the days on which either House is not in session because of an adjournment of more than three days to a day certain.

SEC. 4. There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

[S. 3469, 84th Cong., 2d sess.]

A BILL To increase and revise the authorization for small flood-control projects in section 205 of the Flood Control Act of June 30, 1948, as amended by section 212 of the Flood Control Act of May 17, 1950; and to extend such authorization to bank protection projects

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 205 of the Flood Control Act approved June 30, 1948, as amended by section 212 of the Flood Control Act approved May 17, 1950, is hereby further amended to read as follows:

"That the Secretary of the Army is hereby authorized to allot from any appropriations heretofore or hereafter made for flood control, not to exceed $15,000,000 for any one fiscal year, for the construction of small flood-control and bank protection projects not specifically authorized by Congress, and not within areas intended to be protected by projects so authorized, which come within the provisions of section 1 of the Flood Control Act of June 22, 1936, when in the opinion of the Chief of Engineers such work is advisable: *Provided,* That not more than $500,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year: *Provided further,* That the provisions of local protection specified in section 3 of the Flood Control Act of June 22, 1936, as amended, shall apply: *And Provided further,* That the work shall be complete in itself and not commit the United States to any additional improvement to insure its successful operation, except as may result from specific congressional authorization.

Senator KERR. We have here reports from the Bureau of the Budget and the Department of the Army which will go into the record at this point. Also a note that it is with reference to S. 2853, S. 3272, and S. 3273.

(The reports referred to are as follows:)

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., March 21, 1956.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
United States Senate, Washington, D. C.

MY DEAR MR. CHAIRMAN: This will acknowledge your requests for the views of the Bureau of the Budget on S. 3272 and S. 3273, both of which would increase monetary limitations on the authority of the Secretary of the Army to undertake small flood-control projects not specifically authorized by law.

The bills would authorize the Secretary of the Army to allot in the case of S. 3272 up to $15 million, and in the case of S. 3273 up to $20 million in any one year for the construction of flood-control projects not specifically authorized by law, when in the opinion of the Chief of Engineers such work is warranted. Such allotments would be subject to the following conditions: (*a*) That not more than $500,000 shall be alotted to a single project during 1 year, (*b*) that the provisions of section 3 of the 1936 Flood Control Act, requiring local interests to provide lands, hold and save the United States free from damages, and maintain the work, shall apply, (*c*) that State and local concurrences shall be obtained, and (*d*) that the work shall be complete in itself and shall not commit the United States to additional improvement. The Secretary would be required to report to the Senate and House Public Works Committees on any project costing over $150,000 thirty days before starting construction.

Section 212 of the Flood Control Act of 1950 authorizes he Secretary of the Army to allot up to $3 million in any one year for construction of small flood-control projects not specifically authorized by law, with not more than $150,000 to be allotted to any single locality in 1 year. In addition, the conditions of these bills described above under (*b*) and (*c*) are also applicable to this athority. Thus, these bills would amend section 212 by increasing the total dollar limit on annual appropriations for this purpose and by increasing the dollar limit on costs of unauthorized projects which could be undertaken.

Since reporting to you on S. 2853, a similar bill, the Bureau of the Budget has reviewed its position on legislation amending section 212 in the light of additional facts which have come to our attention. Based on that review, it is considered that some liberalization of the limits prescribed by section 212 would be

warranted. Accordingly, the Bureau of the Budget would not object to amending section 212 to increase the limit on individual projects to $250,000 and the annual limit on appropirations for projects in this category to $5 million.

Sincerely yours,

PERCY RAPPAPORT, *Assistant Director.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., February 24, 1956.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
United States Senate, Washington, D. C.

MY DEAR MR. CHAIRMAN: This will acknowledge your request for the views of the Bureau of the Budget on S. 2853, to authorize the construction of flood protection measures, with particular reference to areas where severe damages have recently occurred as the result of extreme rainfall accompanying hurricane storms.

The bill would authorize the Secretary of the Army to allot up to $10 million in any one year for construction of flood-control projects not specifically authorized by law, when in the opinion of the Chief of Engineers such work is warranted. Such allotments would be subject to the following conditions: (*a*) That not more than $500,000 shall be allotted to a single project during 1 year, (*b*) that the provisions of section 3 of the 1936 Flood Control Act, requiring local interests to provide lands, hold and save the United States free from damages, and maintain the work, shall apply, (*c*) that State and local concurrences shall be obtained, and (*d*) that the work shall be complete in itself and shall not commit the United States to additional improvement. The Secretary would be required to report to the Senate and House Public Works Committees on any project costing over $150,000 thirty days before starting construction. The bill specifically directs the Chief of Engineers to undertake improvements of this type, subject to these conditions, along certain named rivers in the Northeastern States.

Section 212 of the Flood Control Act of 1950 authorizes the Secretary of the Army to allot up to $3 million in any one year for construction of small flood-control projects not specifically authorized by law, with not more than $150,000 to be allotted to any single locality in 1 year. In addition, the conditions of S. 2853 described above under (*b*) and (*d*) are also applicable to this authority. Thus, S. 2853 would in effect amend section 212 by increasing the total dollar limit on annual appropriations for this purpose and by increasing the dollar limit on costs of unauthorized projects which could be undertaken. However, it is not clear whether it is intended that this authorization be limited to the areas specified in section 1 of the bill.

It is considered that the established executive branch and congressional procedures for project authorizations and appropriations, along with the limited flexibility provided by section 212, are adequate to meet the need for expeditious initiation of construction of desirable flood-protection works. In addition, the Corps of Engineers is authorized by Public Law 99, 84th Congress, to undertake emergency flood-control work, including flood fighting and rescue operations and the repair or restoration of any flood-control work threatened or destroyed by flood.

Under the circumstances, we do not believe that it is necessary to amend section 212 as here proposed. Although section 212 permits appropriations of up to $3 million in any one year, the President has proposed and the Congress has appropriated amounts in fact considerably less than this annually. The greatest amount ever appropriated for this purpose was $1 million in 1950 and 1952, and $1 million is also recommended in the 1957 budget.

Furthermore, the limit of $150,000 on individual project costs has not to our knowledge been unduly restrictive so far as the selection of meritorious work to be undertaken is concerned. It is considered that an increase in this limitation of the amount contemplated by S. 2853 would have the effect of weakening both the accepted procedure for executive branch review and congressional authorization of projects and the established budget and appropriations process. However, the Bureau of the Budget would not object to increasing the limitation to $200,000

to reflect increased construction costs since 1950. If the authorizations were so limited, the provisions of section 3 of the bill would appear to be unnecessary.

Accordingly, the Bureau of the Budget recommends against enactment of S. 2853 in its present form, but would not object to legislation increasing the limitation on individual project costs from $150,000 to $200,000.

Sincerely yours,

(Signed) PERCY RAPPAPORT,
Assistant Director.

DEPARTMENT OF THE ARMY
February 15, 1956.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
United States Senate.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of the Army with respect to S. 2853, 84th Congress, a bill to authorize the construction of flood protection measures, with particular reference to areas where severe damages have recently occurred as the result of extreme rainfall accompanying hurricane storms.

The Department of the Army has carefully considered the above-mentioned bill. The purpose of the bill is to authorize the accomplishment of flood-protective measures, not specifically authorized by law, along the Byram, Delaware, Housatonic, Farmington, Mianus, Norwalk, Rippowam, Thames and Blackstone Rivers and other rivers in New England, Pennsylvania, and New York where, in the opinion of the Secretary of the Army and the Chief of Engineers, such measures are warranted. The proposed authority would expire June 30, 1960. The Secretary would be authorized to allot not to exceed $10 million for any 1 fiscal year for such flood control projects subject to the following conditions: (1) Not more than $500,000 would be allotted for any single project in any 1 fiscal year; (2) the provisions of section 3 of the 1936 Flood Control Act, as amended, would apply in order to require local interests to provide lands, hold and save the United States free from damages, and maintain the works; (3) concurrence would be obtained from the affected State or political subdivision; and (4) the work would be complete in itself and would not commit the United States to any additional improvement. The secretary would be required to submit to the House and Senate Public Works Committees a report of the proposed plan of any project estimated to cost in excess of $150,000, and no work would be initiated on such a project until the expiration of 30 days following the transmission of the report.

In the consideration of this bill, full cognizance has been taken of the flood problem in the northeastern States. In addition, consideration has been given to the need for small projects in other regions, to existing legislative authorities, and to the continuance of the present desirable policy under which the Congress specially authorizes all major projects undertaken by this Department.

In connection with the latter consideration, on January 17, 1956, the President transmitted to the Congress, with his endorsement, a report of the Presidential Advisory Committee on Water Resources Policy in which it is recommended that all major projects and programs be authorized by specific act of Congress, and that the Congress establish a more precise definition of the term "small project" and make it binding upon all Federal agencies.

Authority to undertake small projects without specific authorization by the Congress is of value in dealing with a relatively restricted class of flood problems. However, these problems exist throughout the Nation. Hence it would not be advisable to limit authority to any particular region as would S. 2853.

Section 212 of the Flood Control Act of 1950 authorizes the Secretary of the Army to allot from flood control appropriations funds for the construction of small flood-control projects not specifically authorized up to $150,000 for a single locality, and up to $3 million for all such projects undertaken in any 1 fiscal year. The experience of the Corps of Engineers indicates that it would not be desirable to undertake without specific congressional authorization projects very much larger than those which may be constructed under authority of section 212. However, a raising of the limitation on total expenditures in any 1 year would be desirable, and some increase in the amount which may be spent on a single project might in a few instances be helpful.

After considering all aspects of the proposed legislation, this Department concludes that the objectives of the bill can best be attained by amendment of exist-

ing law. The Department of the Army recommends, therefore, that S. 2853 be modified in such a way that it amends section 212 of the Flood Control Act of 1950 (64 Stat. 183) to: (a) raise the existing limit upon the cost of small flood-control projects from $150,000 to $250,000, and (b) increase the amount which may be allotted for such projects in any one fiscal year from $3 million to $10 million.

This Department is confident that by a judicious use of this amended legislation in conjunction with the provisions under which larger projects are submitted to the Congress for specific authorization, the needs of the northeastern States, as well as those of other parts of the Nation, could be meth with efficiency and dispatch.

Inasmuch as the Department has been requested to expedite this report, it is submitted without a determination by the Bureau of the Budget as to whether or not it conforms to the program of the President. As soon as such advice is received it will be forwarded to your committee.

Sincerely yours,

WILBER M. BRUCKER,
Secretary of the Army.

Senator BUSH. Mr. Chairman, may I have the privilege of inserting in the record several statements?

Senator KERR. Yes, sir.

Senator BUSH. First is a statement which I made myself on February 23 on the Senate floor.

Second is a statement by my distinguished colleague from Connecticut, Senator William Purtell, who has filed this statement with us today.

Third is a statement by Senator Martin of Pennsylvania, supporting S. 3272.

Next, a statement by Senator John O. Pastore, with the same object.

Last, a telegram from the Governor of Massachusetts, Christian A. Herter, in which he supports S. 3272.

Senator KERR. That will be done.

(The statements referred to are as follows:)

URGENTLY NEEDED SMALL FLOOD-CONTROL PROJECTS

Speech of Hon. Prescott Bush, of Connecticut, in the Senate of the United States, Thursday, February 23, 1956

Mr. BUSH. Mr. President, I introduce, for appropriate reference, a bill to increase and make certain revisions in the general authorization for small flood-control projects in the Flood Control Act of 1948. The purpose of the bill is to break through the bottleneck of time in the construction of urgently needed flood-protection projects. The bill would give the Corps of Engineers needed flexibility in pressing forward with construction of small, but vital flood-control works for the protection of communities in the State of Connecticut and elsewhere throughout the Nation, which have been so sorely afflicted by flood disasters in recent months.

Joining me in sponsorship of the bill are my colleagues the distinguished junior Senator from Connecticut [Mr. Purtell], the Senator from California [Mr. Kuchel], the Senator from Georgia [Mr. George], the Senator from Maine [Mr. Payne], the Senators from Massachusetts [Mr. Saltonstall and Mr. Kennedy], the Senator from Montana [Mr. Mansfield], the Senator from New Hampshire [Mr. Bridges], the Senator from New Jersey [Mr. Smith], the Senator from Nevada [Mr. Bible], the Senator from New York [Mr. Ives], the Senator from North Dakota [Mr. Young], the Senator from Ohio [Mr. Bender], the Senator from Oklahoma [Mr. Kerr], the Senators from Pennsylvania [Mr. Martin and Mr. Duff], the Senators from Rhode Island [Mr. Green and Mr. Pastore], the Senator from Utah [Mr. Bennett], the Senator from Vermont [Mr. Flanders], and the Senator from Washington [Mr. Magnuson].

Mr. BUSH. Mr. President, I ask unanimous consent that the text of the bill be printed in the Record at the conclusion of my remarks.

The PRESIDENT PRO TEMPORE. Without objection, it is so ordered.

Mr. BUSH. Mr. President, on January 5, I introduced a bill, S. 2853, to authorize the construction of flood-protection measures in the Northeastern States affected by the August and October 1955 floods which caused such great loss of life, human distress, and property damage. This was a companion bill, identical in all major respects, to H. R. 7870, introduced by the distinguished majority leader of the House of Representatives, Mr. McCormack, of Massachusetts.

There is ample justification for giving priority to the need for flood protection in the Northeast. The reasons why we face a greater emergency than other parts of the country were recently summarized by Maj. Gen. E. C. Itschner, Assistant Chief of Engineers for Civil Works, before the Committee on Appropriations, as follows:

First. There is a great chance that the hurricanes and storms that produce floodwaters in the Northeast are much more frequent than we had contemplated heretofore.

Second. Only 22 percent of the authorized flood-control program in New England has been accomplished to date, which is the lowest in any part of the country.

Third. The areas that are affected by floods in New England are extremely highly populated, highly developed and industrialized and developments are concentrated in a small area and a narrow valley, and therefore when they are affected by floods the result is extremely disastrous per unit of area.

Although we must, therefore, regard the Northeast's need for flood-control work as most urgent, it also should be recognized that floods are a national problem. This has been tragically demonstrated very recently by the disastrous floods on the west coast. The records of our chief disaster relief agency, the Federal Civil Defense Administration, show that major flood disasters have affected the following States within the past 3 years: Texas, Florida, Indiana, West Virginia, California, Iowa, New Mexico, South Dakota, Colorado, Nevada, California, North Carolina, Rhode Island, Pennsylvania, New Jersey, New York, Massachusetts, Oregon, and Connecticut. Accordingly, the bill being introduced today proposes to deal with this problem on a national basis.

The need for the proposed legislation arises from the restrictions placed on flood-control work under existing law. The law now requires that flood-control dams and reservoirs and other large projects must be specifically authorized by statute and that appropriations for each undertaking must be voted by the Congress before planning and construction can begin.

This is a necessary and proper procedure, essential for protection of the taxpayers' interests, when flood-control works requiring large expenditures are involved. But it is time consuming, usually requiring the passage of many years.

The Congress has recognized that in the case of small flood-control projects the laborious process of specific authorizations and appropriations can safely be omitted. The Flood Control Act of 1948 provides a general authorization for projects of this kind, with limitations on the cost of any single project of $150,000 and of $3 million on the total amount of expenditures in 1 fiscal year.

The recent flood disasters have demonstrated that these limitations are too restrictive, and are preventing much work which is urgently needed in the light of the emergency conditions confronting my State and other States, not only in the Northeast but on the west coast and in other areas of the Nation.

The bill would correct this defect in present law by raising the limitations in the Flood Control Act of 1948 to $500,000 for single projects, and $15 million for total expenditures in 1 fiscal year.

Local, State, and congressional authority over flood-control works would be safeguarded by the following conditions:

Concurrence must be obtained from the affected States, or political subdivisions prior to the commencement of each proposed project.

In the case of projects which would cost in excess of $150,000, justifications must be submitted to the Committees on Public Works of the House and Senate before work is commenced.

Additional safeguards include provisions requiring compliance with the provisions of local cooperation specified in section 3 of the Flood Control Act of June 22, 1936, as amended; and that the work must be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation, except as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey works.

In a recent inspection trip through the Naugatuck Valley, the worst devastated area in my State, I visited a number of locations where the proposed authority would be invaluable.

In cleaning the river, under the limited authority conferred by Public Law 875, the engineers have deposited earth, gravel, and rock spoil on the banks in the form of dikes. These could be made permanent by reinforcement, rip-rapping, and so forth, and could be tied in with concrete floodwalls and other flood-control structures to provide more adequate protection for the communities which were so adversely affected this past year. Moreover, unless these dikes are protected, another flood may wash them down the river, resulting in a waste of the money already spent.

In addition to locations in the Naugatuck Valley communities, opportunities for providing this kind of essential flood protective work at small cost exist in the flood-affected communities in the Thames River Basin in eastern Connecticut, in the Farmington River Valley in north-central Connecticut, and in Fairfield County in the southwestern part of my State. I am sure that similar work could be accomplished under the authority of the proposed legislation in many other States.

This Congress has recently voted, and President Eisenhower has approved, an urgent deficiency bill providing appropriations for an accelerated flood-control program in the Northeastern States. At this time I should like to express publicly my appreciation to my colleagues in the Senate, especially the distinguished chairman and members of the Appropriations Commitee, for their sympathetic treatment of our needs. This action will permit a savings in time, as much as a year in the case of some projects, in getting this work underway.

The President has, additionally, requested funds for the accelerated northeastern program in his budget for the coming fiscal year. In all, 19 flood-control projects in Northeastern States are included in the accelerated program, involving a total Federal cost of $135,580,000.

Tables listing the construction projects included in the accelerated program for the Northeast follow:

Five projects included in fiscal year 1956 supplemental request for initial construction funds

	Estimated Federal cost
1. Barre Falls Reservoir, Mass	$2, 680, 000
2. Buffumville, Reservoir, Mass	2, 820, 000
3. Otter Brook Reservoir, N. H	4, 800, 000
4. Bear Creek Reservoir, Pa	17, 900, 000
5. Ball Mountain Reservoir, Vt	16, 600, 000
Subtotal	44, 800, 000

Fourteen additional projects included in fiscal year 1957 budget for initial construction funds

1. Thomaston Reservoir, Conn	$16, 000, 000
2. East Brimfield Reservoir, Mass	5, 700, 000
3. Hodges Village Reservoir, Mass	4, 350, 000
4. Worcester, Mass	5, 030, 000
5. Endicott, Johnson City, and Vestal, N. Y	4, 840, 000
6. Dyberry Reservoir, Pa	7, 630, 000
7. Stillwater Reservoir, Pa	9, 200, 000
8. Prompton Reservoir, Pa	5, 860, 000
9. East Barre Reservoir (modification), Vermont	3, 750, 000
10. North Springfield Reservoir, Vermont	9, 900, 000
11. Townshend Reservoir, Vt	10, 800, 000
12. Waterbury Reservoir (modification), Vermont	860, 000
13. Wrightville Reservoir (modification), Vermont	2, 660, 000
14. Woonsocket, R. I.[1]	4, 200, 000
Subtotal	90, 780, 000
Grand total	135, 580, 000

[1] Fiscal year 1956 supplemental includes request for authority to use $150,000 of available construction funds for preparatory work on this project.

In addition to these projects, all authorized by law, other flood-control work in my State and region will be needed. The Corps of Engineers is presently engaged in studies to determine ways of plugging the gaps in the Northeast's flood-control plan which were disclosed by the 1955 floods. This work is being done under authority of a resolution adopted by the Committee on Public Works, at my request, on September 14, 1955, and I am informed that good progress is being made. Additional studies are being made under the so-called Bush Act (Public Law 71, 84th Cong., 1st sess.) to determine methods of preventing hurricane damage along the eastern seaboard.

However, the projects included in the accelerated program are dams and reservoirs and other large protective works, all of which cannot be completed before a considerable lapse of time. It is probable that a number of new projects arising from recommendations based on the studies now underway will require specific authorizations and appropriations. Again, a considerable amount of time must pass before these protective works can come into being.

Although we must wait for the completion of dams and reservoirs and other large protective works, smaller, but vitally needed flood-control measures can be undertaken in the coming months if the bill being introduced today is promptly enacted into law.

We dare not delay. Time is the bottleneck we must overcome to the maximum possible extent. We have been warned, on very responsible authority, there is grave danger of new flood disasters in this very year.

It is my hope that the Committee on Public Works will hold prompt hearings on the proposed legislation. The Corps of Engineers needs the flexibility in flood-control work which it would furnish. The people in the stricken river valleys, not only in my State but throughout the Northeast and other parts of the country, need the protection it would provide. We must break through the bottleneck of time.

The PRESIDENT PRO TEMPORE. The bill will be received and appropriately referred; and, without objection, will be printed in the Record.

The bill (S. 3272) to increase and make certain revisions in the general authorization for small flood-control projects in the Flood Control Act of 1948, introduced by Mr. Bush (for himself and other Senators), was received, read twice by its title, referred to the Committee on Public Works, and ordered to be printed in the Record, as follows:

"*Be it enacted, etc.*, That section 205 of the Flood Control Act of 1948 is amended to read as follows:

" 'SEC. 205. (a) The Secretary of the Army is hereby authorized to allot, from any appropriations heretofore or hereafter made for flood control, not to exceed $15 million for any 1 fiscal year for the construction of flood-control projects not specifically authorized by law when, in the opinion of the Chief of Engineers, such work is warranted, subject to the following conditions:

" '(1) Not more than $500,000 shall be allotted for this purpose for any single project for expenditure during any 1 fiscal year;

" '(2) The provisions of local cooperation specified in section 3 of the Flood Control Act of June 22, 1936, as amended, shall apply;

" '(3) Concurrence shall be obtained from the affected State or political subdivision, or both, prior to the commencement of construction of each proposed project; and

" '(4) The work shall be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation except as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey reports.

" '(b) (1) Before work is initiated under this section on any flood-control project or other flood protective measure which the Secretary of the Army estimates will cost in excess of $150,000 for any 1 fiscal year, he shall submit to the Committee on Public Works of the Senate and the Committee on Public Works of the House of Representatives a report outlining the proposed plan of protection together with an analysis of the justification therefor. The report shall be delivered to both committees on the same day and while each House is in session. No work shall be initiated on any project or other measure with respect to which such a report is made until the expiration of the first period of 30 calendar days, of continuous session of the Congres, following the date on which the report is transmitted to the committees.

" '(2) For purposes of paragraph (1)—

" '(A) continuity of session shall be considered as broken only by an adjournment of the Congress sine die; but

"'(B) in the computation of the 30-day period there shall be excluded the days on which either House is not in session because of an adjournment of more than 3 days to a day certain.'"

STATEMENT BY SENATOR WILLIAM A. PURTELL

I am not here this morning to present expert testimony. You will hear that from others who are much better equipped to give it than I am. I am here to urge your full and favorable consideration of this legislation to provide immediate protection for the people in the Northeast against the type of disaster which struck us in August and October of last year.

Much of that part of the country now lies under snow. Heavy snows over this past weekend have added to the fear and apprehension with which the Northeast awaits the spring with its ice melts and its thaws. Our ground is saturated which means that the spring rains will have to run off.

The unanimity of the New England congressional delegation in favor of legislation of this kind was evident last November at a meeting of that delegation in Boston. All of us here this morning from the Northeast bring with us recollections of the devastation which floods wrought upon our people and our land last summer and fall.

The provisions covered by these proposals are the first steps in providing emergency protection.

The need for immediate additional flood protection is, I think, obvious to all. This legislation also provides for emergency and immediate procedure.

This is special legislation, designed to fit a special situation. After our experiences, I believe it is natural for us not to wait until this protection is achieved through the usual procedures which could unduly and even fatally delay its realization.

The people of the Northeast have fought back valiantly wth every means at their disposal. The action of this committe will be a most important signal that the Federal Government, which has already done magnificent work in helping the recovery, is going all out with the people of that region in this fight against natural disasters whose tolls can be considerably lessened through adequate flood protection.

Mr. Chairman, authorization of this emergency procedure is a matter of vital concern and import to the present and future of the Northeast.

STATEMENT BY SENATOR MARTIN OF PENNSYLVANIA

Mr. Chairman, I regret that it is necessary for me to appear before the Senate Appropriations Commitee this morning, and I am thus prevented from making a personal appearance in behalf of S. 3272. I request that this brief statement be made a part of the record.

I urge, as strongly as I can, the need for the additional authorization provided in S. 3272.

Those of us who represent States hit by the devastating storms and resulting floods of last summer—which seem to be of a continuing nature in my own State—are faced with emergency needs, which the long-term reservoir and dam projects cannot relieve for some years to come.

In the meantime, there are lesser flood-control measures which may be undertaken, in support of the basic flood-control work, which will provide further protection to communities—and prevent costly replacements in the Corps of Engineers plans.

There is not a day that I do not receive an appeal from some community in Pennsylvania, begging for emergency funds to safguard homes and industry—upon which the jobs and lifeline of the people depend.

Just the other day, I received an appeal from the mayor of Meadville, Pa., located in the French Creek Basin area. That community, has over a number of years been victim to the flood conditions of French Creek and its tributaries. We have a broad flood-control project authorized, upon which only the survey stage has been reached. This means at least 5 years will pass before we can hope for effiective relief in the harnessing of French Creek. In the meantime, a large section of the business section of Meadville has been flooded by the heavy rains that occurred about 2 weeks ago. That community depends upon the industries affected, and at this point expects a movement of vital employment—which would leave 300 people out of work.

I mention Meadville only as an example of the continuing problems brought about by emergency flood conditions. There are a number of others of equal or greater necessity in the State of Pennsylvania. The Corps of Engineers is attempting to deal with some of the more pressing needs, particularly in those communities affected by last August's floods—but we realize, on a day-to-day basis, that presently authorized funds are not sufficient to deal even with the most urgent. There is continuing danger unless numerous smaller projects are undertaken promptly. The cost in the long run will be much less, if we can strengthen the danger spots.

I most earnestly urge the committee to take favorable action on S. 3272, extending the Corps of Engineers' authority for emergency flood control work by $15 million, and increasing the amount which may be spent on a single project.

STATEMENT OF SENATOR JOHN O. PASTORE

Mr. Chairman, first of all, I wish to express my appreciation to the distinguished members of the subcommittee, who have been so considerate and cooperative in taking prompt action on legislation which would assist in the prevention of the natural disasters such as floods and hurricanes which have taken place within the past few years.

This hearing is another example of this truly admirable desire to consider the welfare of our Nation of paramount importance. I appear here this morning to appeal for and urge the passage of S. 3272, or other bills of a similar nature. I am privileged to be a cosponsor of S. 3272 and I shall be brief, as I realize how busy the members of this subcommittee are and that time is of the essence.

Speaking of time, it seems to me that S. 3272 is a bill which is engaged in a fight against time. This bill will afford the flexibility which the Corps of Engineers need in dealing with the flood-control problem. Under Public Law 875 and Public Law 71 of the 84th Congress, the Corps of Engineers has done a magnificent job in attempting to carry out the objectives of both of these public laws. However, there comes a time when they must act with utmost speed when, as a result of their study, they find that a comparatively small project must be moved from the drawing board to reality as promptly as possible in order to prevent suffering and damage.

S. 3272 would permit the authority so vitally needed by the Corps of Engineers. Under this bill, the Corps of Engineers will be able to spend up to $150,000 almost immediately to plan and construct a necessary project. If the amount estimated is over $150,000 for any one fiscal year, the Secretary of the Army must submit to the Committee on Public Works of both the Senate and the House of Representatives, a report outlining the proposed plan of production, together with an analysis of the justification therefor. Adequate safeguards are provided in this bill, but by no stretch of the imagination can it be considered a carte blanche for the Corps of Engineers.

While I am familiar with the devastation and damage caused in my own State of Rhode Island, particularly in the Woonsocket and Blackstone Valley areas, I fully realize that this bill will be of national benefit inasmuch as more than one-third of our States have suffered from flood damage in the past 3 years.

If ever the expression "An ounce of prevention is worth a pound of cure" held true, it is in respect to S. 3272. The Corps of Engineers can act almost on the spot when they see a weakness in the flood-control structure of our country. Its hands will not be bound by redtape at a time when the lives and property of our citizens are in jeopardy.

I consider S. 3272 another link in the chain being built to hold back the ravages of nature. Even now, I hesitate to think what the situation will be when the present snow begins to melt, with the resultant flooded streams and rivers.

In conclusion, I would like to say again that time is of the essence and action today may prevent tragedy tomorrow.

BOSTON, MASS., *March 20, 1956.*

Senator PRESCOTT BUSH,
House Office Building,
Washington, D. C.

DEAR SENATOR: Will you in your testimony before the Subcommittee on Appropriations for Civil Works convey my urgent feelings and those of the people of Massachusetts who vigorously ask the committee's approval of the overall flood-

control program submitted by the New England Governors' Conference Committee and approved by the New England congressional delegation? As you and I know this includes the revisions and additions recommended by the United States Army Corps of Engineers following last fall's disastrous floods. Every day we put off this legislation brings us closer to the next devastation and this we cannot afford. I am most certainly in favor of your amendment proposal, S. 3272, for hearing on Wednesday the 21st. Thank you for your great interest.

CHRISTIAN A. HERTER,
Governor of Massachusetts.

Senator KERR. We will now hear Mr. Wise.

Senator BUSH. Mr. Wise is an expert witness. He has been connected with our water problems in Connecticut for many, many years. He is a very highly thought-of man. He is now chairman of the water commission. He will otherwise identify himself to the committee.

Senator KERR. I want the witnesses to know that I am one of the authors of these bills and I am very interested in them, and only through circumstances beyond my control will I be compelled to be absent while you are giving your testimony. I will be happy to read it and use it appropriately in our efforts to get action on this bill.

Senator BUSH (presiding). Thank you, Mr. Chairman. We will do the best we can.

Mr. Wise, will you proceed?

STATEMENT OF WILLIAM S. WISE, DIRECTOR, CONNECTICUT STATE WATER COMMISSION

Mr. WISE. The State of Connecticut has, of course, just gone through one of the most serious disasters in the country. Floods last fall have caused a total damage estimated at approaching a half-billion dollars. These disasters, of course, have taught us many lessons. They have emphasized one great need, and that is that in order to protect New England, which is unusual in many respects as far as flood protection is concerned, we need to be protected by a number of small projects rather than some of the large ones, although we do need protection from large projects on our large rivers, but the floods last fall have damaged 15 small river valleys and have disrupted industrial production that was so vital to the national economy and the national defense.

Our Governor is very vitally concerned with this bill that sets forth a procedure for construction and flood control on small projects, and he regrets very much that he is unable to appear here in person because of his very strong feeling in support of this bill.

I would like to read in part his statement, which will indicate his feeling about this measure.

STATEMENT OF HON. ABRAHAM RIBICOFF, GOVERNOR OF THE STATE OF CONNECTICUT, AS READ BY WILLIAM S. WISE, DIRECTOR, CONNECTICUT STATE WATER COMMISSION

"The United States Army Corps of Engineers has done an outstanding job in Connecticut following the two disastrous floods of last fall.

"Acting under the provisions of Public Law 875, they carried out emergency work and made temporary repairs which were instrumental in the State's rapid recovery. The engineers also are planning a long-

range flood-control program of permanent projects. The latter plans will have to have congressional authorization and appropriations, which mean a lapse of at least several years before construction can even start.

"The emergency work and the long-range plans are logical first and third steps that must be taken after catastrophies such as the Connecticut floods. There is no provision in the present laws, however, for a very necessary second step—the immediate undertaking of small flood-control projects of a permanent nature.

"This need has become very obvious in Connecticut's reconstruction. In numerous instances throughout the State, the engineers widened and deepened stream channels to eliminate flood hazards. The material taken from the streams was piled up on the nearby banks. This is considered emergency work, and the law allowed the engineers to carry it out.

"The law does not permit the engineers, however, to convert these spoil areas into permanent dikes by facing them with rock or making other similar provision."

And there are other ways and methods for undertaking small flood-control projects besides this one just mentioned.

The Governor's statement continues:

"As matters now stand, the basis for some excellent, permanent flood-control works has been established. The first flood that comes along, however, will undoubtedly wash these spoil areas back into the channels, and the streams will then be free to spill over into the low-lying, unprotected areas.

"It would be good economy and good protection if our laws permitted the engineers to coordinate their emergency work with small permanent projects. For a comparatively modest expenditure, the Federal Government would be providing flood-control projects that could prevent millions of dollars in damage.

"This present void in the law would be filled by the passage in the Congress of Senate bill 3272, which was introduced by Senator Prescott Bush, of Connecticut. Senator Bush knows of the many vulnerable, temporary dikes and measures which stand today throughout the river valleys of Connecticut.

"These dikes can be made strong, permanent structures by the adoption of Senate bill 3272.

"The State of Connecticut approves the provisions of this bill which would:

"(1) Authorize an appropriation of $15 million for the Chief of Engineers to spend in any fiscal year for the construction of flood-control projects not specifically authorized by law:

"(2) Limit the cost of any one project to not more than $500,000; and

"(3) Specify that projects in excess of $150,000 must have the approval of the Committee on Public Works of the Senate and the House.

"With this authority and with these funds, the engineers could move soon after a disaster to prevent a repetition of widespread suffering and damage. The providing of these small flood-control works as well as the large, permanent projects is by precedent and experience a responsibility that rightly belongs to the Federal Government.

"As has already been pointed out this week to the Appropriations Committees of both the House and the Senate, Connecticut is doing much for itself. The Connecticut Legislature has authorized the spending of more than $73 million in flood recovery work. More than $1 million of this total will be spent on flood-control projects. But the job is too big for Connecticut, or any other State hit by such a disaster, to do by itself. As mentioned before, there are 15 river valleys concerned in this rebuilding project.

"Federal help is needed if Connecticut and other States are to have adequate protection from the threat of future floods.

"Senate bill 3272 would provide such protection.

"Floods cause industrial interruptions. This is harmful to the States where the floods occur and it is harmful to the United States Government. The Federal Government is one of the biggest beneficiaries in the continuous industrial productivity of the individual States. Federal income taxes take about 50 percent of the earnings of manufacturing firms. When flood destruction reduces the earning power of these companies, then the United States Treasury loses large amounts of tax revenue. When a flood disrupts industry, the Federal Government loses more than the earnings for that year. Such losses can be deducted from the profits earned in other years, thus cutting into other than current tax revenue.

"So simple logic shows that flood-control projects help pay for themselves many times over.

"It is a sound business investment, therefore, for the United States Congress to authorize these small flood-control works. In addition to benefiting the people of the individual States and the economy of those States and the Nation, such appropriations help insure the steady flow of Federal Tax revenue."

There may be some concern as to whether this might not encourage the setting up of ill-conceaved, ineffective, and economic projects because of their being adopted and carried out following emergency. Such situations certainly should not develop if there is a wholehearted and complete cooperation between the Federal, the State, and the local agencies, and certainly we in Connecticut, have enjoyed and benefited from such cooperative procedures for many years.

The special session of the legislature, as we pointed out, last fall appropriated $1 million for flood-control studies and protective measures. That small amount of money obviously can only be spent on small projects.

If Federal funds were available for additional projects, the effective necessity of the combined programs of the Army engineers and of the State undoubtedly would be greatly increased and possibly multiplied over the separate project. One could complement the other and produce an overall program of great value.

Connecticut is a strong believer, in this, and we believe that great value could accrue from the passage of this bill and authorizing the Army engineers to undertake it.

We therefore strongly urge favorable consideration on the passage of this bill, so that Connecticut can proceed with its urgent program of rebuilding and reconstruction.

Senator BUSH. Thank you very much, Mr. Wise, and thank you for submitting the Governor's very forceful endorsement of this bill.

General Fleming, will you come forward, please? In order that you may not have to come back next week, the chairman, Senator Kerr, suggested that he would be glad to have your testimony right now. So if you will be seated, we will be glad to let your proceed in your own way. But first, I would like to ask some questions for the record here so that we can either get from you now or at a later time certain information that we want in the record in connection with the consideration of this bill.

The accelerated program for the Northeastern States recommended by the President in the urgent deficiency bill for the fiscal year 1956, and the budget for fiscal year 1957, contemplates the construction of flood-control dams and reservoirs and local protection works.

Please list for the record the projects included in the accelerated program and for each project the date of authorization, the total Federal cost, funds appropriated prior to fiscal year 1956, the appropriations for fiscal year 1956, and appropriations recommended for fiscal 1957. Assuming that Congress provides the needed funds for fiscal 1957, and succeeding years. what is the earliest date by which this urgently needed additional flood protection for the region can be completed? Please give the completion date for each project included in the accelerated program.

I don't know whether you are prepared to answer all those questions at this time.

STATEMENT OF ROBERT J. FLEMING, JR., BRIGADIER GENERAL, UNITED STATES ARMY, DIVISION ENGINEER, NEW ENGLAND DIVISION, UNITED STATES ARMY CORPS OF ENGINEERS

General Fleming. I am not prepared to answer except in a general way at this time. I would ask the Chief Engineers' office to get that data and submit it for the record.

Senator Bush. We will give this memorandum to the Chief of Engineers.

General Fleming. In general the completion date of the project, assuming that we have the supplemental 1956 appropriation, assuming that we get the amount in the fiscal 1957 budget, and the further assumption that the expenditure program which we submitted tc the committees in the defense of those budgets are followed in future appropriations, the completion date on most of the projects is about 1960—between 1959 and 1960. There are in the supplemental program 2 local protective works and 10 major regulatory works involved in the area of the New England division.

Senator Bush. How many other flood-control projects, those not included in the accelerated program, have been authorized in New England?

General, I think rather than run through this, we should submit this to the Chief of Engineers' office, General Itschner, and let them supply this information. This has to be carefully worked out. He can supply the answers to this list of questions when he comes down next Thursday. Wouldn't that save time?

General Fleming. I think so.

Senator Bush. General, I have no questions to ask you. You are of course familiar with the situation up there, much more so than any-

body I could think of. So if you would care to express yourself in your own way as to your views on this measure, you may do so.

General FLEMING. I would like to start off, Senator, by saying that I am here solely to discuss the specific problem as concerns New England. Representatives of the Chief of Engineers, my superiors, General Itschner and others, will testify as far as the Chief of Engineers is concerned on the national aspects of this proposed bill. So my comments will be entirely on the situation as involves my area in New England.

My comments also, as I make them, will be colored by the fact as I see the problem in New England. I plead guilty to the fact that I do not know what the situation is in the rest of the country. But unfortunately, however, I am overly familiar with the flood situation and the particular critical problem which faces the New England States at this particular time. Therefore as I give my story I probably cannot but help be colored a little bit by my intimacy with that particular problem.

I think we have a situation in New England which, when the flood control legislation was passed by the Congress, throughout the years, was never contemplated. On public works projects the procedure imposed by Congress has included a very thorough engineering analysis which, in addition to figuring out the feasible thing from an engineering standpoint, also went into hydrological factors, economic factors, and things like that, in an attempt to forecast what might happen. You needed that forecast in order to design protective works.

The situation we now have in New England is that nature has done most of that preliminary work for us. The floods in August were about 3 to 3½ or 4 times the previous maximum floods of record. There are scars in the valleys of New England now, particularly in the Farmington River in Connecticut, the Naugatuck River in Connecticut, the Blackstone, which flows through Massachusetts and Rhode Island, the Thames River Basin which originates in Massachusetts and flows into Connecticut, and in certain tributaries of the Connecticut River in Massachusetts, largely the Westfield and Chicopee, there are scars which the floodwaters have carved on the landscape. We have there visible and ready to read the engineering factors which could be obtained only after very laborious computations in the past

The Congress has rightfully prescribed a procedure for public works projects, whereby a survey report is directed, a report is rendered to the committee which authorizes us to make the report, through the Bureau of the Budget and then is considered by the committee and finally authorized by both Houses of Congress, I think in my own opinion that that administrative detail and routine was prescribed by the Congress to insure that no hasty, ill-advised work was done. In order to have that insurance it imposed a time delay, in the process of getting a project written up in acceptable form and then the time necessary to have it considered by the entire Congress. The point I am trying to make is that nature in New England in this last flood has actually shown us in many cases what should be done.

I think that we are now up against a situation where we are fighting time. As a result of the work under Public Law 875, and I received very liberal instructions in interpreting that law, we have done on various streams in New England work which in normal times we

would have done under a permanent flood-control project. These were such things as channel clearance and actually increasing capacities at various places where bridges had gone out. We couldn't leave the wrecked bridge and rubble in, so we widened the channel and improved the hydraulic characteristics. In doing that we have taken the material that we have excavated out of the streams and piled it at the nearest place we could. We have piled it along the stream banks in what are actually embryo dikes. They are a start toward permanent dikes. We did this very hurriedly. We were not able to make detailed analyses of the soil mechanics of the earth we put into those dikes. We weren't always able, even under the most liberal interpretation of Public Law 875, to convert those things into permanent works. The result is that now in several of the communities in New England, we have these embryo dikes which have not been faced on the outside with riprap or stone. In many cases they aren't tied back into high ground because of the existence of a road at a different grade from the top of the dike. We had no authority to change any elevations in roads, nor do we have any authority if the road has to stay in the same place, to construct a permanent stop log structure which could be used as a block through that gap.

A typical project, typical situation, which we have right now is, for example, the city of Torrington, Conn. Even after the expedited program of authorized flood-control projects is constructed, Torrington will still be vulnerable because it is upstream from the only presently authorized project on the Naugatuck River. Torrington now has these dikes, embryo dikes—I would like to emphasize that—it has had certain channels cleared and widened, it has had bends enlarged where bridges formerly constricted the stream, and various things of that sort. If we have a recurrence in Torrington, not of the high water of last August, but of, say, water which would approximate the flows of the previous flood of record of 1948 in the Naugatuck Valley, or the storm which we had in October following the August storm which was almost 30 percent greater than the previous flood of record, we would lose a large part of the temporary work which has already been done because it does not have the strength built into it to withstand ordinary high water.

The States are participating in this program, or are prepared to participate in it. The State of Massachusetts has an appropriation, I believe, of $5 million for flood-control work, and you might say, drainage work inside of communities affected by the last flood, which they are going to use to expand any efforts the Federal Government makes. Connecticut has already made available, with a smaller problem due only to the smaller size of Connecticut compared to Massachusetts, the sum of $1 million.

Rhode Island has appropriated similar sums. I don't know exactly how much it now has available, for State participation in this. The city of Torrington, if I may go back to use that illustration, has already bonded itself to the tune of about $450,000 just so it can buy properties, buy right-of-ways and things like that, to give us the right to go in and make these temporary improvements.

I don't think anywhere in New England is there a lack of local participation. There is right now a delay being encountered because the local authorities in the three States affected by the floods don't

know what the Federal Government is going to do. Due to the time lag in getting a project through the study phase and through the authorization phase, it will be some time before we can tell them what the Federal Government is planning to do.

Senator BUSH. Is it not true that the action that this bill would permit are among the uncertain factors, too?

General FLEMING. Yes, sir.

Senator BUSH. Incidentally, and parenthetical to your remarks, have you any estimate as to how much of the $15 million annually authorized under S. 3272 might be needed in New England immediately?

General FLEMING. Yes, sir. We figure that, assuming the bill passes, assuming the appropriation is made, we estimate—this may be a liberal estimate again because I am optimistic in this thing—we estimate that there would about eight projects in the category that we could complete in fiscal year 1957.

In other words, between the first of July of this year and June 30 of 1957, there are about 8 of these projects which would cost somewhere around the neighborhood of $3,200,000.

Senator BUSH. An average of about $400,000 per project?

General FLEMING. Yes, sir.

Senator BUSH. Go ahead. I didn't want to break your train of thought.

General FLEMING. With the States having the money appropriated and available, they are up against the situation of not knowing what the Federal Government will do in the future.

Under the present procedure, which imposes this time of authorization, it is going to be some time, frankly, in my opinion, before we can tell them what authorized projects there are going to be. I think that they are vulnerable. The States are desperately anxious to get started. We have done some work which, with every day that passes, will bring us closer to the next high-water period. With every day that passes that work is going to be vulnerable and we are apt to lose it for the lack of some additional measures which we weren't able to do under Public Law 875.

The procedure, of course, sir, imposed by the Congress, now has under section 212 of the flood control law the authority for the Chief of Engineers to authorize—not to authorize projects, but Congress delegated to him the power to approve projects where the total cost is about $150,000 and the money can be spent in one fiscal year. I believe that last year about $800,000 was appropriated for that for the country as a whole.

Senator BUSH. There is a limit there.

General FLEMING. There is a limit of $150,000 for each project.

Senator BUSH. And there is an overall limit?

General FLEMING. There is an overall limit. It is the appropriations which they make each year. Last year it was in the neighborhood of $800,000.

The problem in New England, sir, is this: The projects we have, the work we did under Public Law 875, in various communities is so extensive that where I said there were 8 that could be done—averaging about $400,000, depending on the limit Congress puts on it—if the limit were held at $150,000 there are probably only 3 that could be done.

Unless, which Congress wouldn't permit, we could pyramid one on top of the other. That would be a subterfuge and I don't believe it should be done.

Senator BUSH. So you are faced with a real limitation, then, unless something is done right away in the way of legislation to permit you to go ahead.

General FLEMING. Yes, sir. I think there is a very great potential danger of losing a lot of work which has already been done. These nine places that I am talking about are locations where flood threat would not be decreased by the construction of any now authorized flood-control work, because they are located upstream from reservoirs.

Senator BUSH. Is it possible for you to give us the names of the nine locations that you do have in mind? Have you them in mind so you can give them for the record now?

General FLEMING. Yes, sir. I would like to submit that for the record later.

Senator BUSH. We will be glad to have that.

General FLEMING. I can give you 2 or 4 illustrations now. Torrington, Conn. is obviously one situation. New Hartford, Conn., and another is the extension of the presently authorized project through Woonsocket, R. I. There is one up around the town of Palmer in Massachusetts.

(The information referred to is as follows:)

The nine locations previously referred to are as follows: Naugatuck, Conn.; Seymour, Conn.; Derby, Conn.; Union City, Conn.; West Branch, Naugatuck River, Conn.; East Branch, Naugatuck River, Conn.; Torrington, Conn.; New Hartford, Conn.; and Ware, Mass.

Senator BUSH. Wouldn't a lot of work going on in the Naugatuck River, below Waterbury, where those temporary dikes are just thrown up, would they be eligible for work under this bill?

General FLEMING. I would hope that they would be, sir.

Senator BUSH. Permanent work?

General FLEMING. Yes, sir. Because the Thomaston Dam in the Naugatuck Valley controls roughly about 31 percent of the basin. If we had had—leaving the August flood out of consideration and just talking about the October flood in the Naugatuck Valley—even had Thomaston Reservoir been operating in the October flood, there still would have been some very serious damage in the towns of Naugatuck and Ansonia.

We have thrown up these temporary dikes in those two communities. Additional protection is going to be required in Ansonia and Naugatuck in addition to the protection of Thomaston Reservoir.

For example, I have the figures here. At the city of Naugatuck in October the flow, assuming the Thomaston Dam had been built, would have been 22,500 second-feet. It actually reached about 35,000 second-feet. So the effect of Thomaston, downriver as far as Naugatuck, really knocks off about one-third of that October flood. The previous flood at Naugatuck was 28,500 second-feet in 1948. The point I make is that even with the recurrence of the October flood, and Thomaston Reservoir having been built, Naugatuck would still get almost as much water as it got in the previous flood or record in 1948. So I think at Naugatuck and Ansonia both, additional protection will eventually be required. Some work has already been done at both of

those places under Public Law 875 which could be converted into a permanent improvement.

Senator BUSH. That is what I had in mind.

General, is that all that you have to observe this morning?

General FLEMING. Yes, sir. I will answer any questions that you have.

Senator BUSH. The committee thanks you for coming down here to testify. As I have said many times before, New England certainly owes you a very great debt of gratitude for your constant and faithful interest in our problems during the past year. We don't know sometimes what we would have done without you.

General FLEMING. Thank you, sir.

Senator BUSH. Mr. Coe, will you come forward, please?

Will you identify yourself for the record, please?

STATEMENT OF EDWARD S. COE, NAUGATUCK VALLEY RIVER CONTROL COMMISSION

Mr. COE. My name is Edward S. Coe. I am a member of the Naugatuck Valley River Control Commission. I am also vice president of the Farrel-Birmingham Co. with plants in Ansonia and Derby, Conn., both of which were quite severely flooded during the August and October floods of last year. We employ roughly 2,000 people in this area.

I am not here to interest you in my company, however. I am speaking primarily for the Naugatuck Valley River Control Commission, which in turn speaks for all the people of the Naugatuck Valley.

These are represented by agriculture, private residence, commercial, and manufacturing establishments and so forth.

Your committee is probably well aware of the tremendous toll of life and property in the Naugatuck Valley caused by both the August and the October floods. Your committee has undoubtedly seen pictures of the damage and I am sure that you, Senator Bush, have talked about the damage up and down our particular valley, and you certainly spent a lot of time with us both during and after these floods.

I would like to emphasize, however, that a final exact cost of the destruction to this heavily populated and industrialized area can never be computed. First and most important, no one can place a value on the 100 human lives which were lost in the flood. Secondly, unforeseen consequences of the flood continue to show themselves.

My own company, as an example, we estimated originally $1 million damage in the August flood, and approximately a quarter million dollars damage in the October flood. Subsequent investigations of foundations and buildings along the river, crane structures, supporting the structures and so forth, outages because of electrical damage and so forth, caused our estimates to be increased to $1,750,000 for our small company, and the actual charges—these are direct charges only—to date are roughly $1,675,000.

The flood emergency committee appointed by Governor Ribicoff to assess damage reported immediately after the flood an estimate of $202,801,832 total direct damages.

Mr. Wise used a figure of roughly a half billion dollars for Connecticut. I believe this is the figure that is currently being used by

the United States Army Engineers Corps as a sum total of the direct as well as the indirect cost. By indirect cost we mean—at least I interpret the meaning to be—things like wages lost, shipments out the door that you never will recoup, and industry in the valley was down for approximately 3 to 5 months in some instances.

These heavy industrial losses, while staggering to our area, are important to the United States as a whole. The Naugatuck Valley is a vital factor in our national defense.

Roughly 67 percent of the entire United States brass production is located here. The valley is one of America's major metal manufacturing centers. It also contains important textile, rubber, machinery, munitions, and chemical plants. Loss of these industries would be a major blow to our defense effort.

Right here I want to rebut those in high places and low who tell us that we should pick up our plants and homes and move them from the Naugatuck Valley.

It is true, of course, that our industries were located in the river valleys historically, in some measure because of the need for waterpower, but if that had been the only reason, these industries would have long since been removed and certainly few if any additions of any considerable proportion would have been made.

Most industries, particularly our heavy industries such as our brass mills, need large quantities of water which cannot be supplied in sufficient volume at reasonable cost by wells. Our rivers, streams, and ponds supply this need. Furthermore, there is need for waterways for the return of these treated process waters.

Of prime importance also is the need for rail facilities, for our industries, because of their character, cannot depend entirely upon trucks. As an example, there are several industries in the Naugatuck Valley such as our own where shipments are made in single-piece machined castings, for instance, that will weigh up to 70 tons.

This naturally means that you can't be shipping this sort of machinery by truck. It is very vital that we have our rail sources.

Is there anyone who cannot conceive of the difficulty of the relocation of the New Haven Railroad along the hills of our valley? Remember we are here considering a river which drops 540 feet in 44 miles of heavily populated valley which is narrow and confined.

Can anyone tell us where the money is coming from, the $50 million necessary, for instance, to move the United States Rubber Co. to higher ground or to move the 3 plants of the American Brass Co. in Torrington, Waterbury, and Ansonia? There is every evidence that our industries which pulled themselves up by their bootstraps after the 1955 floods, intend to remain here in the area of large supplies of highly skilled labor and adequate existing facilities.

The people of the Naugatuck Valley are deeply indebted to the United States Corps of Engineers for the work done since the floods under authorities granted under Public Law 875, and I am certainly glad to have listened to the general here again because we are all very pleased and very happy with what he has done for us, and I speak primarily, of course, for the commission, but secondarily for the lower Naugatuck Valley and the cities of Derby, Ansonia, Seymour, and so forth.

They have cleared the silt and gravel from the river and piled it on the banks. Admittedly, these piles of light, pervious material will be no protection against the floods which we now anticipate will recur in the not-too-distant future. We feel that it is of utmost importance to "break the bottleneck of time," if we may borrow an expression from Senator Bush. Unless these temporary improvements can be protected by surface and core protection, riprapping, permanent diking, and other means, the next high water will find all this material back in the river and all this taxpayers' money will have been wasted.

We cannot afford to wait for the ordinary process by which specific project appropriations are ground through the congressional mill. Governor Ribicoff, who has worked so hard for flood control in Connecticut, felt it necessary yesterday to hold a conference with the Army engineers, the Connecticut Civil Defense and State Police, the Weather Bureau, the Red Cross, and others, to prepare for the expected emergency this spring in view of the saturated condition of the ground.

I might add after the last weekend, but with 5 inches of snow in Norfolk and around a total of 20 to 24 inches in the lower Naugatuck Valley, we are somewhat worried about ground conditions there, too. If we should have a warm rain, we may be in some immediate trouble.

We are even more concerned however, with the approaching hurricane season this fall, and subsequent falls, for that matter.

The Naugatuck Valley River Control Commission, of which I am a member, is vitally concerned with flood control on the river. The commission was appointed by Governor Ribicoff under authority of a special act passed by the Connecticut General Assembly at its November–December 1955 special flood session. It is charged generally with the task of studying flood control on the Naugatuck, making recommendations to the Governor and the Connecticut General Assembly, and supporting Federal and State agencies in the same field of flood control.

Members of the commission represent each of the 9 towns in the Naugatuck Valley, and have a combined experience with the Naugatuck River of 240 years. In addition, prior to being appointed on the commission, we had designated an engineering advisory group which represents an additional, let's say, 175 years of experience with the river. We therefore have gathered together for ourselves a representative group of men who have had considerable experience up and down the Naugatuck.

Immediately after organization, the commission appointed as its technical advisers a group of engineers whose experience with the Naugatuck River in its normal, freshet, and flood stages totals more than 175 years. Thus, the commission and its staff represent a combined experience with the Naugatuck River of more than 415 years.

The commission has held meeting with the Federal Civil Defense Administration, representatives of the Corps of Army Engineers, the State highway commissioner, the executive secretary of the State flood control and water policy commission, the mayors and first selectmen and city engineers of the communities located on the Naugatuck River, and with private citizens whose knowledge of the river would aid the commission in its conclusions as to flood control.

The commission has prepared an interim report to the Governor, presently being printed, which contains the combined thinking of all concerned, as to the vitally needed improvements, including dikes, pumping stations, canalization, and permanent improvements to temporary flood-control structures.

Our hard-hit municipalities do not have, and cannot conceivably raise, the funds necessary to do many of the things that must be done. The State of Connecticut is also limited in its resources. Consequently, we must look to the Federal Government for help.

Our commission has examined carefully the provisions of both Senate bill 2853 and Senate bill 3272. Your committee is familiar with the provisions of both and there is no need for analysis of them, but in short they authorize the Secretary of the Army to allot $10 million in one case and $15 million in another for flood projects not exceeding $500,000 in cost for anyone project, when in his opinion such work is warranted. Both bills contain safeguards in that any project costing more than $150,000 in 1 year must be justified before your committee.

Such legislation as is proposed here is of vital importance to our area. The proposed Thomaston Dam admittedly does not constitute the entire answer to our problem. We understand from the Corps of Engineers that 3 or 4 construction seasons are required to complete the Thomaston Dam, which means 1959 or 1960.

In the meantime we need dry dams on our tributaries, permanent diking, flood walls, channel clearance, and so forth, and we need them long before 1959 or 1960.

As I said previously, our commission has recommended a general program of flood protection which is heavily dependent upon Federal participation. Both bills contain adequate safeguards by requiring larger projects, that is over $150,000 to be justified before your committee. The bills also provide the flexibility and speed which is so important in our present situation.

If we were to choose between the two bills we would recommend to you Senate bill 3272 because it is of general application to the country as a whole. In view of the floods of the past fall and winter there are many areas which share our problem. They should be included in the overall Federal program.

Having experienced two major floods in the past year we are perhaps more sympathetic to the needs nationally than those who have not gone through such tragic experiences.

We do feel, however—and I should emphasize this—that the job to be done in the country as a whole is greater than that contemplated by the present $15 million limitation. This amount should be raised considerably if the needs of those who have been struck and those who will inevitably be struck are to be met.

In summary let me emphasize the financial investment this country and our national defense now has in the Naugatuck Valley of Connecticut. Let me also emphasize that time is short. The people of our valley who have supported by their taxes flood control in other sections of the country need help right away. Let me emphasize finally that acts of God such as tornadoes, hurricanes, and floods have no respect for fiscal years.

There is need now and there has been a need for many years to provide for interim emergencies to break the bottlenecks as provided in these bills. Floods always change the character of a river course. The

Naugatuck is no exception. It is this type of necessary stopgap which is provided for in the legislation before you, which you have presented, Senator Bush.

Our commission on behalf of the people of this important section of the United States recommends that you give serious consideration to the passage of Senate bill 3272 with an increased appropriation over and above the 15 million dollars limitation as one means of supplying this help.

Senator BUSH. Thank you very much, Mr. Coe. That report which you made to the Governor, have you a copy of that here?

Mr. COE. We have not made this report to the Governor as yet. I indicated that it is being printed right now.

Senator BUSH. The committee would like to have a copy of that report, to consider whether it wouldn't be a good insertion for our record of these hearings.

So if you would kindly send us one as soon as it is available we will be glad to have it and may put it in the record if it seems appropriate.

Mr. COE. We will so do.

Senator BUSH. I want to thank you for coming down here. Our committee, which is not awfully well represented here today, is very sympathetic with this whole proposition. Each one of them has spoken to me about it.

I wouldn't want you to go back and feel that the lack of attention that they are showing this morning is any indication of their interest in this bill. It is far from it. As you know, we have 20 Senators, including Senator Kerr and other members of this committee, who are responsible sources of this legislature.

Thank you very much, Mr. Coe, for coming down here.

Mr. COE. Thank you, sir.

Senator BUSH. Mr. Shutler, will you come forward please?

Will you be seated please and make your statement.

STATEMENT OF PHILIP SHUTLER, VERMONT WATER CONSERVATION COMMISSION

Mr. SHUTLER. I am Philip Shutler, Director of the Connecticut River Valley Flood Control Commission. I shall identify the commission. It is an interstate commission representing four States on the Connecticut River: Connecticut, Massachusetts, New Hampshire, and Vermont. It exists by virtue of a flood-control compact which was agreed to by the Congress and signed by the President in June 1953.

The commission is very much interested in the present bill and believes that it should be enacted into law. I think I can say that all of the members, although I haven't polled them all, would agree that additional funds could very well be added to that which is set up in the bill.

I will not attempt to add to the record anything about flood losses or anything of that sort. You have all of that. I would, with respect to the Connecticut River, point out that the August flood caused the third highest stage of record at the city of Hartford, despite the fact that no upstream tributaries above the city of North Hampton were involved in New England flood water to the area.

I would like to submit to the committee later a copy of the report on the August flood which was prepared by the Water Resources Branch of the Geological Survey. That presents the path of the storm, the rainfall, and it covers Massachusetts, Rhode Island, Connecticut, part of New York State, New Jersey, and Pennsylvania. On pages 33, 34, and 35 are the hydrographs of the flood on various streams in all of those States, excepting Rhode Island. A noticeable feature about those hydrographs is, one, that the flood height exceeded any known on any of those streams with two exceptions.

The second is that the rising curve of the flood went up almost vertically. The rainfall occurred during the night and the flooding took place in the early morning hours before daylight or shortly thereafter. There was no chance of a prediction that such flood was in the making, and had there been, there would have been no chance to alert the people who were going to be attacked by it.

I think at page 34 that the hydrograph for the Naugatuck River is shown. Later on in the document is the hour-by-hour record of how the water came up. It began on August 18 with 93 second-feet of water flowing past the gage at 6 o'clock in the morning. By 4 o'clock in the afternoon that had gotten up to 4,600 second-feet. Then it dropped off to 10 o'clock where it was only 2,000 second-feet flowing. Anyone observing the river would have thought there was no danger anymore. But after midnight that stream rose by jumps in half hour periods of 7, 13, and 5 thousand second-feet per half hour. The point I would like to bring out is that this behavior of those streams indicates that much more careful attention than is commonly given to the matter of adequate storage behind the flood-control dam, and adequate discharge capacity from the spillway, are necessary if dams are to be built and to be safe against such rainfall.

I mentioned sometime ago that there was no rainfall that caused flooding above the city of North Hampton. There is a map showing the storm, in the early part of the report, which shows the storm followed roughly the line of Connecticut and Massachusetts and went on East and the isohyetals stop at the boundary of the ocean. We don't know, and there can be no record of how far out into the Atlantic that same pattern of heavy precipitation went.

We have nothing, we know of no way of predicting the conditions in the upper atmosphere that made the storm follow that pattern. It might as well have followed the pattern which had taken it up northeastward rather than eastward. And if that had been the case, many more rivers in New England would have been in flood and the flood at Hartford, perhaps, would have exceeded any previous flood, even the one of 1936.

Senator BUSH. Mr. Shutler, I would like to observe that I am going to have to adjourn this meeting in about 5 minutes. I would like to get your special attention on this particular bill and get your testimony on that of a positive nature if possible.

Mr. SHUTLER. I was coming a circuitous route.

Senator BUSH. I know you were coming to it, but I must advise you that we will have to adjourn in about 5 minutes.

Mr. SHUTLER. I brought that report into the record so that the Senators will see that there is a situation where we have had one effect of it

which requires emergency treatment anywhere on the streams. It is not confined to Connecticut or Massachusetts. You will find the same situation in Pennsylvania and in New Jersey. We have to meet the same sort of situation there. In my opinion we have to meet it quickly.

There are perhaps in the whole area 35 or maybe 50 projects. They are all small in themselves. Getting the data together for the Congress to act on would require a year or more. Individually, I do not think they warrant the attention of the full committee of Congress, either House, and the full debate and the cost to the Government in doing that. I think it should be avoided. This bill would provide a way to do it and a way with plenty of safeguards.

Senator BUSH. Thank you very much for coming down, Mr. Shutler. We are very appreciative of the time you have given to this matter. We are delighted to have your testimony.

That ends the list of witnesses that we have. I have for insertion in the record at this point a statement by Mr. Charles W. Cooke, Director of Public Works, Hartford, Conn.; also a statement of Joseph L. Miller, of Washington, D. C., who speaks on behalf of the Quinebaug-French Rivers Manufacturing Association, and a statement by Senator Thomas H. Kuchel.

(The statements referred to are as follows:)

STATEMENT OF CHARLES W. COOKE, DIRECTOR OF PUBLIC WORKS, HARTFORD, CONN.

It is our understanding that this bill S. 3272 permits the allotment of $15 million in any 1 year for flood control projects recommended by the Chief of Engineers, if such project being recommended to $500,000 in any 1 fiscal year.

This should make possible Federal financial help for local communities damaged by the flood of last August much faster than by present regulations. Many Connecticut communities suffered acutely last August. Their plight is well known and it is not necessary to repeat the details here. All of these affected communities would certainly stand to benefit by the adoption of this bill. Hartford, among other communities, was visited by the August flood but we were fortunate in not having suffered the loss of life which other communities did.

The Park River cuts the city of Hartford in two parts. This zone along the 2 branches of the stream was flooded including many feet of water over the 9 bridges across the stream. For about 12 hours the city was cut in 2 and it was impossible to get from the east side of the city to the west side. Fortunately, no serious fires occurred during this period. About 700 families were flooded out of their homes. Our direct damage was $5,250,000. Assuming the indirect damage to be twice the direct, the total damage from this flood in Hartford is estimated to be $15,750,000.

The special session of the Connecticut General Assembly which was called by the Governor after the flood, authorized the Governor to appoint the so-called Park River Flood Control Commission. This commission now studying this local flood problem and using the services of consultants hopes to take the necessary steps to prevent the recurrence of this August flood disaster.

The adoption of this bill will make possible Federal help in projects such as this. The flood control problems on this stream are not limited to Hartford but involve 3 neighboring communities. These communities could also be benefited by this bill.

The construction work involved in this flood program will consist of channel improvements, restoration of valley storage capacity, replacement of bridges and numerous other related steps. The adoption of this bill S. 3272 is recommended and also any similar measures which will shorten in numbers the various legal steps which will have to be taken to accomplish these much-needed flood control measures.

STATEMENT OF JOSEPH L. MILLER IN BEHALF OF THE QUINEBAUG-FRENCH RIVER MANUFACTURERS ASSOCIATION

My name is Joseph L. Miller. My address is 1025 Connecticut Ave., NW., Washington 6, D. C. I appear in behalf of the Quinebaug-French River Manufacturers Association, representing industry and the citizenry in the valleys of those two rivers in southern Massachusetts and eastern Connecticut. Southbridge and Webster, Mass., and Putnam, Conn., are three of the principal towns in that area.

We were damaged to the extent of some $35 million by the floods which followed Diane last August, and are here to urge your speedy approval of S. 3272 which, as we understand it, would permit the Army Engineer Corps to undertake small but important emergency flood-control projects without specific authorization or appropriations.

We already have asked the Appropriations Committee to accelerate expenditures for 4 dam-and-reservoir projects authorized by this committee and the Congress—since, at the present rate these would not be completed for 9 years.

But much could, we believe, and should be done in an area for relatively small sums such as S. 3272 would authorize.

Take Cady Brook, for instance.

Cady Brook is a small, meandering stream less than 10 miles in length. It runs through the towns of Charlton and Southbridge where it joins the Quinebaug. Diane, however, turned this brook into a raging torrent which took 4 lives, left property damage of some $3,500,000 in Charlton and of $3,175,000 in Southbridge.

Today, Cady Brook sits almost exactly as it was left by the disastrous effect of the flood. The three industrial dams destroyed are still down, and the whole area is highly vulnerable to a flash flood.

Much of the restoration has to be done, and will be done under State and local authority, but the brook should be widened and straightened, to provide a better carry-off in times of floods.

Could the Army engineers have dealt with it following the flood, the actual expenditure on their part would have been small but through their efforts a pattern and design could have been developed into which the State and local people could fit their projects.

The brook impinges on the Thames River Basin project. It is not included in it and under the present authority the Army engineers are unable either to do any work or to exercise any jurisdiction in the area. Had they the flexibility of approach proposed by Senator Bush's proposed bill, S. 3272, the whole situation in that area would be greatly benefited.

We want to thank you for giving us this opportunity to present just one example of the many situations we believe Senator Bush's bill would take care of, expeditiously and well, and to thank Senator Bush for his continuing interest in this problem.

STATEMENT OF SENATOR THOMAS H. KUCHEL

The bill S. 3272, providing general authorization for small flood-control projects, will plug a serious hole in the system of administrative and legislative dikes by which the Congress and the Federal Government have attempted to protect the people of the United States, their land, homes, livestock, transportation, and utility systems, and other possessions against the rampages of nature.

I am happy to join as cosponsor of this measure because tragic happenings in my own State of California, in New England, in the Middle Atlantic region, and other sections of the country have demonstrated an urgent need for a law which will make it possible in building flood-prevention works to keep pace with the growth of our Nation and the development of various areas where in past years heavy rains and snowmelt could run harmlessly to the sea without endangering life and property.

All of us on this committee are gravely concerned about the importance of pressing forward as rapidly as finances, manpower, and planning allow with the comprehensive system of flood-control projects which have been authorized at previous sessions of Congress. We also are thoroughly aware that the presently authorized works will not extend protection to all communities and sections which are entitled to the benefits of such projects. At the same time, we realize that the amount of imagination and foresight will enable either Congress

or the administrative agencies of the Government, particularly the Army Corps of Engineers, to anticipate conditions which may make additional projects both desirable and economically feasible.

During recent history, it has been customary for Congress every few years to hold long hearings and draft a bulky omnibus bill authorizing a number of projects which it is intended will be built over a period of following years. Those projects are approved on the strength of evidence about the threat of danger to different areas measured by a yardstick of possible loss in terms of life and dollars which is applied against the estimated cost of protective works.

The writing and enactment of such a bill is laborious and a time-consuming process. Inevitably many proposed projects are left on the shelf because time did not permit consideration of the need and the merit.

The omnibus bills, such as those of 1936, 1944, 1946, 1950, and 1954, were designed to provide protection against conditions as they existed at those particular times. They did not—because they could not—take into consideration the possible expansion of cities in stream valleys, the development of farms in lands made possible of cultivation by irrigation and reclamation projects, the construction of new highways and relocation of old ones over more direct routes, and the vagaries of weather which every so often seems to be following a pattern different than in the past.

The capital investments which the Congress in the past 20 years has authorized—which exceed $3,500 million not including the vast lower Mississippi program—have paid big dividends and justified the expenditure. Yet, the growth and development of our Nation has proceeded faster than it is possible for Congress to authorize, and the Federal Government to obtain money with which to build, additional projects that are sorely needed.

The reason why legislation such as S. 3272 is warranted can be illustrated by references to conditions in my own State of California. The ambitious flood-control program for Los Angeles County has had to be modified and revised repeatedly because of the way population has jumped and suburban areas have come into being. The completion of the great Central Valley project has opened up vast acreages which formerly could not be cultivated because of insufficient or unstable water supplies. As people have spread into the foothills of the mountains of southern California and onto the lands in the Central Valley, they have occupied tracts of land which are susceptible to flooding whenever extraordinary rains and thaws occur. In many instances, the threat to these more recently settled places comes from small streams and isolated canyons which are not parts of any major river systems or in a recognized drainage basin.

If the Army engineers in the past had had the authority to plan, engineer and build projects of the sort contemplated in S. 3272, very probably there already would be in existence a number of small projects—dikes, retarding dams, and debris basins—which would safeguard these newly created residential communities and lately developed farming areas against just such unforseen and uncontrollable natural catastrophes as occurred in California during the past winter.

This bill is sound. It would give flexibility to the continuing effort to protect the people of our Nation against floods. The discretionary authority we provide to construct without the necessity of getting specific authorization projects costing not over $500,000 and which are complete entities in themself will enable the Army engineers to initiate works as new demands arise.

Any chances that this power would be misused to launch work which might lead to continuing expenditures and that the bill would provide a foot-in-the-door approach toward big commitments to make future appropriations are offset by the limitations that projects costing between $150,000 and $500,000 must be reviewed and approved by the Public Works Committees of Congress and by the ceiling of $15 million on the outlay in any fiscal year. The requirements of local participation, involving substantial contributions by the people who would benefit, insure that no boondoggles could be undertaken.

During the past 3 years, major floods have occurred in 18 different States. In a number of the affected areas, no flood-control projects ever were authorized, presumably because the possible threat was not considered grave enough to warrant including authorization in one of the omnibus bills that have been enacted in the past two decades or the proposed projects were deemed too small for serious consideration. Experience has shown, however, that those affected areas cannot be ignored and when disaster strikes once it easily can hit again. The army engineers under our legislation could swing into action to provide

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future protection against a repetition of heavy damage in such sections of our Nation.

This legislation would be a logical supplement to present statutes and in all probability a moneysaving step in the long run. Congress has authorized the Army engineers, the Federal Civil Defense Administration, and other agencies to engage in emergency rescue and rehabilitation work and it has provided Federal credit through the Small Business Administration for rebuilding homes and farms and businesses. It seems only good sense to give the Army engineers this kind of discretionary power to build small projects which could avert disasters and thus minimize the need for spending Federal funds to fight floods and get people back on their feet.

This legislation would apply the time-tested principle that an ounce of prevention is worth a pound of cure.

Senator BUSH. We will adjourn this hearing until next Thursday at 10 o'clock.

(Whereupon, at 1:12 p. m. the hearing was adjourned, to reconvene at 10 a. m., Thursday, March 29, 1956.)

EMERGENCY FLOOD CONTROL

THURSDAY, MARCH 29, 1956

UNITED STATES SENATE,
COMMITTEE ON PUBLIC WORKS,
SUBCOMMITTEE ON FLOOD CONTROL—RIVERS AND HARBORS,
Washington, D. C.

The subcommittee met, pursuant to adjournment, at 10:10 a. m., in room 412, Senate Office Building, Hon. Robert S. Kerr presiding.

Present: Senators Kerr, Bush, and Hruska.

Senator KERR. The committee will come to order.

Senator JACKSON. Mr. Chairman, I have a very brief statement here in connection with the bill that I introduced. It will take about 2 or 3 minutes.

STATEMENT OF HON. HENRY M. JACKSON, UNITED STATES SENATOR FROM THE STATE OF WASHINGTON

Senator JACKSON. Mr. Chairman, your committee will now be considering Senate bill 3469 which I have introduced.

This bill would raise the existing limits on amounts which may be expended for small flood-control projects without specific authorization from the Congress. It places a limit of $500,000 on expenditures for a single project and permits a total investment of $15 million in such projects in 1 year.

The bill would also add authority for the undertaking of bank-protection projects under this authorization.

The need for this legislation is urgent. In testimony before the Public Works Committee last year the Chief of Engineers pointed out that an estimated $300 million annual loss is sustained from floods on smaller river valleys. He also stated that flood-control projects on major river valleys are now preventing over $490 million in damages each year and when authorized projects are complete, these flood losses are expected to be reduced to $200 million a year.

These figures show that much of our effort to control floods must now be directed to areas on smaller river valleys and isolated locations on major streams where, although the results may not be so dramatic, the savings in life and property will be extremely significant.

The provision for bank-protection works in this bill will greatly enhance the ability of the Army engineers to undertake needed flood-control measures. These protective works are expected to be effective in a number of areas in the State of Washington and the neighboring States of Idaho and Oregon. However, the need for work of this type

is nationwide and I am sure the Army engineers can present the best technical justification of the need for this authority.

Mr. Chairman, as you know, the procedure for authorization and appropriation by the Congress for flood-control projects, now required by law, it is a necessary requirement in the case of large projects involving considerable expenditures. This procedure protects the taxpayers' interests.

However, the Congress has recognized the need for a procedure to handle small projects which require less expense in time and money. Existing law is justified on these grounds. However, present restrictions on the undertaking of small projects must be liberalized if the job is to be done.

I might point out right there that we have had an increase in cost each year on construction of about 5 percent. We have placed these old limitations in—I think the present one is $150,000.

Senator KERR. That is right.

Senator JACKSON. At the present time. In all candor, Mr. Chairman, I think we have all had the experience where investigations—hearings—have consumed a lot of dollars before the project could be authorized. The need for holding a hearing and travel and all the necessary expense attendant with this. Certainly there is an area in which these projects can be handled by appropriation pursuant to the limitations that are suggested in this bill.

The extensive damage caused by disastrous floods in New England has dramatized the need for additional and immediate investment in flood control. Extensive damage has already occurred in the Northwest this year and the spring runoff is expected to create dangerous conditions which will further point up the need for immediate action.

The success of past efforts to control floods has shown that we can substantially reduce the half billion dollar annual damages the Nation suffers from floods. The investment in control works is small in comparison to the savings which result.

I respectfully urge the committee to approve the additional authorization included in Senate bill 3469 in order to give the Army engineers another effective means for attacking flood problems.

That completes my statement, Mr. Chairman.

Senator BUSH. Mr. Chairman, I think that is a very excellent statement and the Senator certainly is aware of the very pressing need for emergency legislation of this kind to expand the authority of the engineers and I congratulate the Senator on his statement.

Senator JACKSON. Thank you, Senator Bush. I know you have a bill in, too, along this same line.

We have one additional feature in this bill which I think is very important. It provides for bank protection.

We have, I know in our area and I am sure it is true in other sections of the country, a real problem in connection with bank stabilization. That is, we have these fast runoffs. The fast runoffs, Mr. Chairman, result in a bank-cutting proposition that can be devastating. In many cases streams will change their course and, of course, wreak terrible damage.

I wanted to point out that my bill is exactly the same except for this additional feature with reference to bank stabilization.

I do believe that the bank-stabilization feature is a much needed one. One of the big problems that we have throughout the country,

these small streams or smaller rivers in which we know from past experience, that the proper bank protection there can save a lot of property. The purpose of this is to deal with a myriad of rivers and valleys throughout the country that in the aggregate probably do more damage than the bigger rivers. I am sure that is true in New England and out in Oklahoma, Nebraska, and our country. It is not just the tremendous rivers that cause all the flood damage.

Senator BUSH. Oh, that is absolutely correct.

Senator JACKSON. It is a series of small ones.

Senator HRUSKA. Mr. Chairman, may I ask the Senator if this would be one way of putting it, that there are two features to your bill really—one enlarges the financial scope and the other enlarges the scope of operation, the actual scope of operation of the present law?

Senator JACKSON. Yes, sir; that is correct. It increases the annual appropriation to $15 million authorization and it increases the authorization for any 1 project that the Corps of Engineers might spend to $500,000. It is a recognition of the fact that much of our flood-control problems today are these small projects throughout the country, in the aggregate they cause tremendous damage.

I do feel, Mr. Chairman, that we can save the taxpayers a lot of money on these small projects by avoiding long-drawn-out hearings that take 3 or 4 years. By the time you add up the cost and the resurveys that have been held over a period of time, it is a tremendous investment and the lag between the time the estimates have been made and the time they call for bids, in many instances, Mr. Chairman, requires a change in the authorization figure before you can appropriate money because with the increased cost of construction which goes on, as I indicated earlier, I think at about the rate of 5 percent a year, roughly that approximately.

A VOICE. The last 3 years.

Senator JACKSON. The last 3 years, prior to that it was even higher during the postwar period, means that it is hard to get an estimate, a legislative authorization, rather, that will be accurate insofar as appropriations are concerned.

Senator KERR. Thank you very much, Senator Jackson.

Senator JACKSON. Thank you, Mr. Chairman.

Senator KERR. General Itschner.

General, we are glad to have you here this morning. Do you have a prepared statement?

General ITSCHNER. I have a statement, sir.

Senator KERR. Thank you. You may proceed.

STATEMENT OF MAJ. GEN. E. C. ITSCHNER, UNITED STATES ARMY, ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS, ACCOMPANIED BY J. R. BRENNAN, CHIEF, SURVEY BRANCH, CIVIL WORKS DIVISION

General ITSCHNER. Mr. Chairman, would you like me to proceed in making this statement?

Senator KERR. Yes.

General ITSCHNER. I appreciate this opportunity to appear before you today in accordance with a letter dated March 13, 1956, and the later verbal request from you chairman, Senator Kerr, and present

certain aspects of the flood-control problem as administered by the Chief of Engineers.

The Chief of Engineers, Lt. Gen. Samuel D. Sturgis, has asked me to express his regret that he could not be present. He is absent for a period of several weeks. Nevertheless, the views that are contained in this statement of mine accurately represent his views and he has seen the statement and has cleared it.

I shall present a brief statement concerning the various points raised in the cited letter, and then if desired, members of my staff and I will be available here to answer any questions which you may have.

The active flood-control program of the Corps of Engineers includes 763 projects with an estimated cost of $4,800 million. Of these, 341 have been completed, construction funds have been appropriated for 96 others, and 326 projects are awaiting construction appropriations. To date, $1,600 million has been appropriated and additional appropriations of $3,200 million are required for completion.

There are 40 multiple-purpose projects not included in the foregoing whose primary function is considered to be flood control. Of these, 18 have been completed, 12 others have received construction appropriations, and 10 have yet to receive an appropriation for construction.

Senator KERR. Do you have a tabulation of those projects under those different categories?

General ITSCHNER. The list of the projects, sir?

Senator KERR. Yes, sir.

General ITSCHNER. Yes, sir; we do.

Senator KERR. Would you submit that for the record?

General ITSCHNER. Yes, sir.

(The information requested is as follows:)

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED

Alabama:
- Prattville, Autauga Creek
- Tombigbee River, Ala. and Miss. (1936 act) (completed portion)

Alaska:
- Fairbanks, Tanana River and Chena Slough
- Lowell Creek
- Salmon River

Arizona: Holbrook, Little Colorado River

Arkansas:
- Bayou Bodcau Reservoir, Ark. and La.
- Blue Mountain Reservoir
- Cardens Bottom Levee District No. 2
- Conway County Levee Districts Nos. 1, 2, and 8
- Conway County Levee District No. 6
- Crawford County Levee District
- Faulkner County
- Fort Smith
- Hemstead County Levee District No. 1
- Little Rock
- Little Rock to Pine Bluff
- McLean Bottom Levee District No. 3
- Near Dardanelle
- Newport
- Nimrod Reservoir
- North Little Rock
- North Little Rock to Gillett (above Plum Bayou)
- North Little Rock to Gillett (below Plum Bayou)
- Pine Bluff

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

Arkansas—Continued
- Poplar Bluff to Knobel (Arkansas portion)
- Poplar Bluff to Knobel (Missouri portion) (see Missouri)
- Roland Drainage District
- Skaggs Ferry
- Terre Noire Creek
- Van Buren
- Village Creek, White River and Mayberry Districts
- West of Morrilton (also see inactive list)

California:
- Big Dry Creek Reservoir
- Brea Dam
- Farmington Reservoir
- Fullerton Dam
- Isabella Reservoir
- Lytle and Cajon Creeks
- Pajaro River
- Pine Flat Reservoir
- Prado Dam
- Ventura
- Merced County Stream group

Colorado:
- Cherry Creek Reservoir
- Creede Willow Creek
- Colorado Springs
- John Martin Reservoir
- Pueblo

Connecticut:
- East Hartford
- Hartford (see active list for Folly Brook section)
- Mansfield Hollow Reservoir
- Winsted

District of Columbia: Washington, D. C., and Vicinity (1936 Auth.)

Georgia:
- Augusta
- Macon
- Rome

Idaho:
- Coeur d'Alene, Spokane River
- Heise Roberts area
- Ste. Maries, St. Joe River

Illinois:
- Banner Special Drainage and Levee District
- Big Lake Drainage and Levee District
- Brookport
- Chouteau, Nameoka and Venice Drainage and Levee District
- Coal Creek, Drainage and Levee District
- Columbia Drainage and Levee District No. 3
- Crane Creek Levee and Drainage District
- East Cape Girardeau and Clear Creek Drainage and Levee District
- East Liverpool Drainage and Levee District
- East Peoria Drainage and Levee District
- Farm Creek Reservoir, Ill.
- Farmers' Levee and Drainage District
- Fort Chartres and Ivy Landing Drainage and Levee District No. 5.
- Galena
- Golconda
- Harrisburg
- Harrisonville-Ivy Landing Drainage District No. 2.
- Henderson County Drainage District No. 3
- Hennepin Levee and Drainage District
- Lacey, Langellier, West Mantanzas and Kerton Valley Drainage and Levee District
- Liverpool Drainage and Levee District
- Mason and Menard Levee and Drainage District
- Meredosia Lake and Willow Creek

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

Illinois—Continued
- Miller Pond Drainage and Levee District
- Mounds and Mounds City
- Mouth of Sangamon River
- Near Springfield on Sangamon River
- Oakford Special Levee and Drainage District
- Pekin, LaMarsh Drainage and Levee District
- Penny Slough, Rock River
- Prairie du Rocher and Vicinity
- Reevesville
- Rosiclare
- Rocky Ford Drainage and Levee District
- Seahorn Drainage and Levee District
- Sny Island Levee District (1936 authorization)
- Spring Lake Levee and Drainage District
- South Beardstown Drainage and Levee District
- South Beardstown and Valley Drainage and Levee District
- South Quincy Drainage and Levee District (1936 authorization)
- Stringtown-Ft. Chartres and Ivy Landing Drainage and Levee District

Indiana:
- Brevoort Levee
- Cannelton
- Cagles Mill Reservoir
- Delphi
- Gill Township Levee
- Jeffersonville-Clarksville
- Lawrenceburg
- Levee Unit No. 8, West Fork of White River
- Lyford Levee Unit, Wabash River
- Muncie
- Tell City
- New Albany

Iowa:
- Council Bluffs
- Dry Run
- Elkport
- Green Bay Levee and Drainage District No. 2 (1936 authorization)
- Hamburg

Kansas:
- Fall River Reservoir, Kansas
- Hulah Reservoir, Kansas and Oklahoma (see Oklahoma)
- Iola
- Kanopolis Reservoir
- Hutchinson

Kentucky:
- Ashland
- Dewey Reservoir
- Hawesville
- Middlesboro
- Newport
- Paducah
- Russell, Ky.
- Taylorsville
- Uniontown, Ky.
- Covington, Ky.

Louisiana:
- Aloha-Rigolette area
- Bayou Bodcau, Red Chute, Loggy Bayou
- Bayou Bodcau Res., Ark. and La. (See Ark.)
- Bayou des Glaises (F. C. portion)
- Bayou Pierre
- Bayou Pierre, vicinity of Shreveport
- Bayou Teche and Vermillion River
- Columbia
- Grant Parish below Colfax
- Jonesville (F. C. portion)

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

Louisiana—Continued
- Lake Pontchartrain (F. C. portion)
- Natchitoches Parish
- Mermentau River
- Pineville
- Red River Parish
- Red River, vicinity of Shreveport (same as Shreveport)
- Saline Point
- Wallace Lake Reservoir

Maryland: Savage River Reservoir

Massachusetts:
- Birch Hill Reservoir
- Chicopee (also see Inactive List)
- Holyoke
- Knightville Reservoir
- Lowell
- Northampton
- Riverdale
- Springdale
- Springfield
- Tully Reservoir
- West Springfield

Michigan:
- Mount Clemens
- Red Run, Clinton River
- Sebewaing River

Minnesota:
- Aitkin
- Lac Qui Parle Reservoir
- Lake Traverse, Bois de Sioux, S. D. and Minn.
- Red Lake and Clearwater Rivers

Mississippi:
- Big Black River
- Homochitto River
- Tombigbee River, Ala. and Miss. (see Ala.)

Missouri:
- Clearwater Reservoir
- Fabius River Drainage District (1936 authorization)
- Gregory Drainage District Levee
- Poplar Bluff to Knobel (Mo. portion) (also see Inactive List)
- South River Drainage District (1936 authorization)
- Union Township Drainage District Levee

Montana:
- Forsyth
- Glasgow

Nebraska:
- Bartley
- Harlan County Reservoir
- Indianola
- Omaha
- Schuyler (Platte River, near)

New Hampshire:
- Blackwater Reservoir
- Edward MacDowell Reservoir
- Franklin Falls Reservoir
- Nashua
- Surry Mountain Reservoir

New Jersey: Mount Holly

New Mexico:
- Conchas Dam
- Jemez Canyon Reservoir

New York:
- Addison
- Almond Reservoir
- Arkport Reservoir

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

New York—Continued
- Avoca
- Bath
- Binghamton
- Canisteo
- Corning (see Active List for Monkey Run section)
- East Sidney Reservoir
- Elmira
- Hoosick Falls
- Hornell
- Lancaster, Cayuga Creek
- Lisle
- Montour Falls
- Mount Morris Reservoir
- Olean
- Owasco Inlet and Outlet (also see Inactive List)
- Oxford
- Painted Post
- Portville
- Syracuse
- Whitney Point Village
- Whitney Point Reservoir

North Carolina:
- Goldsboro
- Tar River

North Dakota:
- Baldhill Reservoir
- Homme Reservoir
- Mandan (1946, 1949 and 1950 authorizations)

Ohio:
- Berlin Reservoir
- Cincinnati
- Delaware Reservoir
- Ironton
- Massillon
- Mosquito Creek Reservoir
- Muskingum River Reservoir (14 Res.)
- Newark
- Portsmouth-New Boston
- Tom Jenkins Res. (Burr Oak)
- Wellsville (section 1 and 2)
- West Fork Mill Creek Reservoir

Oklahoma:
- Canton Reservoir
- Fort Supply Reservoir
- Great Salt Plains Reservoir
- Hulah Reservoir, Kans. and Okla.
- Jenks
- Lugert-Altus Reservoir
- Polecat Creek (Heyburn Reservoir)
- Tulsa and West Tulsa
- Wister Reservoir

Oregon:
- Beaver Drainage District, Columbia County
- Blind Slough Diking District, Clatsop County
- Cottage Grove Reservoir
- Deer Island Area, Columbia County
- Diking District No. 2, Clatsop County
- Diking District No. 5, Clatsop County
- Dorena Reservoir
- Drainage District No. 1, Clatsop County
- Fern Ridge Reservoir
- John Day River Area, Clatsop County
- Karlson Island, Clatsop County

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

Oregon—Continued
- Knappa Area, Clatsop County
- Lewis and Clark River Area, Clatsop County
- Magruder Drainage District, Columbia County
- Marshland Drainage District, Columbia County
- Midland Drainage District, Columbia County
- Mill Four Drainage District.
- Milton-Freewater
- Multnomah Drainage District, No. 1, Multnomah County
- Nehalem River
- Pendleton, Umatilla River
- Peninsula Drainage District No. 1, Multnomah County
- Peninsula Drainage District No. 2, Multnomah County
- Rainier Drainage District, Columbia County
- Sandy Drainage District, Multnomah County
- Sauvie Island (Areas A and B) Multnomah County
- Scappoose Drainage District, Columbia County
- Tenasillahe Isand, Clatsop County.
- Umpqua River and Tributaries
- Walluski River, Clatsop County
- Warrenton Diking District No. 1, Clatsop County
- Warrenton Diking District No. 2, Clatsop County
- Warrenton Diking District No. 3, Clatsop County
- Webb District Improvement Company, Columbia County
- Westland District Improvement Company, Columbia County
- Westport District, Columbia and Clatsop County
- Woodson Drainage District, Columbia County
- Youngs River Dikes, Clatsop County

Pennsylvania:
- Conemaugh River Reservoir
- Crooked Creek Reservoir
- East Branch Clarion River Reservoir
- Johnstown, Pa., Channel
- Kingston-Edwardsville
- Kittanning (Part I)
- Latrobe
- Loyalhanna Reservoir
- Mahoning Creek Reservoir
- Plymouth
- Punxsutawney
- Sunbury
- Tionesta Reservoir
- Wilkes-Barre Hanover Township
- York
- Youghiogheny Reservoir

South Dakota:
- Belle Fourche
- Lake Traverse, S. Dak. and Minn. (See Minn.)

Tennessee: Tiptonville-Obion River Levee (flood control portion)

Texas:
- Benbrook Reservoir
- Grapevine Reservoir
- Hords Creek Reservoir
- Lavon Reservoir
- San Angelo Reservoir
- Lewisville Reservoir (Garza-Little Elm)

Utah: Redmond and vicinity

Vermont:
- Lamoille River (*see also*) Inactive List
- Union Village Reservoir

Virginia: Galax

FLOOD CONTROL PROJECTS COMPLETED AND ESSENTIALLY COMPLETED—Continued

Washington:
- Consolidated Diking and Improvement District No. 1, Cowlitz County
- Cowlitz County Drainage Improvement District No. 1
- Deep River Area, Wahkiakum County
- Diking and Improvement District No. 11, Cowlitz County
- Diking and Improvement District No. 5, Cowlitz County
- Diking and Improvement District No. 2, Cowlitz County
- Diking and Improvement District No. 13, Cowlitz County
- Diking Districts Nos. 1 and 3 (Puget Island) and Little Island, Wahkiakum County
- Diking and Improvement District No. 1, Pacific County
- Mill Creek Reservoir
- Mud Mountain Reservoir
- Skamokawa Creek Area, Wahkiakum County
- Stillaguamish River
- Tacoma, Puyallup River
- Upper Grays River Area, Wahkiakum County
- Yakima
- Diking and Improvement District No. 4, Wahkiakum County

West Virginia:
- Ceredo-Kenova
- Elkins
- Huntington, W. Va., Sections 1, 2, and 3
- Parkersburg
- Point Pleasant

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE UNDERWAY

Arizona: Painted Rock Reservoir

Arkansas:
- Little Missouri River
- Ozan Creek

California:
- Devil, East Twin, Warm, and Lytle Creeks
- Los Angeles County Drainage Area
- Lower San Joaquin River and Tributaries
- Riverside
- Sacramento River
- Sacramento River and Major and Minor Tributaries
- San Antonio and Chino Creeks
- Cherry Valley Reservoir
- Russian River Reservoir
- San Antonio Reservoir
- Whittier Narrows Reservoir

Connecticut:
- Folly Brook
- Norwich

Florida: Central and Southern Florida

Idaho:
- Columbia River Local Protection: Portneuf River and Marsh Creek
- Lucky Peak Reservoir

Illinois
- Beardstown
- Clear Creek Drainage and Levee District
- Degognia and Fountain Bluff Drainage and Levee District
- East St. Louis and vicinity
- Grand Tower Drainage and Levee District
- North Alexander Drainage District
- Preston Levee and Drainage District
- Wilson and Wenkel and Prairie Dupont Drainage and Levee District
- Wood River Drainage and Levee District

Indiana:
- Evansville
- Indianapolis
- Vincennes

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE UNDERWAY—Continued

Iowa:
- Chariton River, Iowa and Mo.
- Little Sioux River
- Missouri River Agricultural Levees, Iowa, Kans., Mo., and Nebr.
- Coralville Reservoir

Kansas:
- Kansas Cities, Kans. and Mo.
- Topeka
- Wichita and Valley Center
- Toronto Reservoir
- Tuttle Creek Reservoir

Kentucky:
- Barbourville
- Catlettsburg
- Jackson
- Louisville
- Maysville
- Pineville
- Rough River Reservoir and Channels

Louisiana:
- Red River Levees and Bank stabilization below Denison Dam, Ark., La., and Tex.

Maryland:
- Anacostia River, D. C. and Md.
- Cumberland, Md., and Ridgeley, W. Va.

Massachusetts:
- Adams
- North Adams
- Barre Falls Reservoir
- Buffumville Reservoir

Minnesota: Red River of the North, Minn. and N. Dak.

Missouri:
- Cape Girardeau
- Carthage
- East Poplar Bluff and Poplar Bluff
- Perry County Drainage and Levee Districts Nos. 1, 2, and 3

Montana:
- Havre
- Saco

Nebraska: Missouri River, Kenslers Bend, Nebr., to Sioux City, Iowa

New Hampshire: Otter Brook Reservoir

New Mexico:
- Rio Grande Floodway
- Chamita Reservoir

New York:
- Batavia
- Monkey Run (Corning)
- Wellsville

North Carolina: Pasquotank

Ohio: Dillon Reservoir

Oklahoma:
- Oklahoma City Floodway
- Markham Ferry Reservoir
- Oologah Reservoir

Oregon:
- Amazon Creek
- Willamette River Bank Protection

Pennsylvania:
- Bradford
- Johnsonburg
- Swoyersville and Forty Fort
- Williamsport
- Bear Creek Reservoir

Rhode Island: Woonsocket

FLOODWAY CONTROL PROJECTS (WITHOUT POWER), ACTIVE, UNDERWAY—Continued

South Dakota:
- Fall River Basin
- Sioux Falls
- McCook Lake

Tennessee: Memphis, Wolf River, and Nonconnah Creeks

Texas:
- Buffalo Bayou
- Dallas Floodway
- Fort Worth Floodway
- Canyon Reservoir
- Ferrells Bridge Reservoir
- Texarkana Reservoir

Vermont: Ball Mountain Reservoir

Washington:
- Castle Rock
- Eagle Gorge

West Virginia: Sutton Reservoir

Wyoming: Greybull

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED

Alabama: Paint Rock River

Alaska:
- Gold Creek
- Skagway River and Harbor

Arizona:
- Alamo Reservoir
- Whitlow Ranch Reservoir

Arkansas:
- Calion
- Conway County Drainage and Levee District No. 1
- Holla Bend Bottom
- Maniece Bayou
- McKinney Bayou, Ark. and Tex.
- Poster Bayou, Ark. and La.
- Walnut Bayou
- Millwood Reservoir

California:
- American River
- Middle Creek
- Mill Creek Levees
- San Jacinto River and Bautista Creek
- San Lorenzo Creek
- San Lorenzo River
- Santa Clara River (active units)
- Santa Maria River
- Black Butte Reservoir
- Carbon Canyon Dam and Channel
- Hogan Reservoir
- New Melones Reservoir
- Success Reservoir
- Terminus Reservoir
- Tuolumne River Reservoir

Colorado:
- Boulder
- Erie
- Trinidad
- Chatfield Reservoir

Connecticut: Thomaston Reservoir

District of Columbia: Washington, D. C. (1946 act)

Hawaii:
- Hanapepe River
- Kawainui Swamp
- Wailoa Stream

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

Idaho:
- Columbia River Local Protection:
  - (a) Blackfoot Area
  - (b) Blackfoot River
  - (c) Boise valley
  - (d) Camos Creek
  - (e) Heise-Roberts area extension
  - (f) Kendrick
  - (g) Lightning Creek
  - (h) Little Wood River
  - (i) Mud Lake
  - (j) Payette Valley
  - (k) Shelley area
  - (l) South Fork Clearwater River
  - (m) Teton River; not economically justified (not counted)
  - (n) Welser River
  - (o) Whitebird Creek
  - (p) Lewiston-Clarkson Levees

Illinois:
- Alton
- Bonepas Creek
- Campbell's Island
- Drury Drainage District
- England Pond Levee
- Henderson County Drainage District No. 1
- Henderson County Drainage District No. 2
- Henderson River (active units)
- Hunt Drainage District and Lima Lake Drainage District
- Indian Grave Drainage District
- Levee Unit 1, Little Wabash River
- Levee Unit 1, Wabash River
- Levee Unit 2, Little Wabash River
- Levee Units 3 and 4, Wabash River, Ill. and Ind.
- Little Calumet River, Ill. and Ind.
- New Harmony Bridge, Ill. and Ind.
- Rochester and McCleary's Bluff Levee
- Russell and Allison Levee
- Sny Island Levee District
- South Quincy Drainage and Levee District
- Sub-District No. 1 of Drainage Union No. 1 and Bay Island Drainage and Levee District No. 1
- The Sny Basin
- Tri Pond Levee
- Carlyle Reservoir

Indiana:
- Adams Levee
- Deer Creek Prairie Levee
- Fletcher and Sunshine Gardens Levee
- Greenfield Bayou Levee
- Island Levee
- Levee Unit 1, White River
- Levee Unit 2, Wabash River
- Levee Unit 2, East Fork of White River
- Levee Unit 3, East Fork of White River
- Levee Unit 5, Wabash River
- Levee Unit 7, White River
- Levee Unit 9, West Fork of White River
- Levee Unit 10, West Fork of White River
- Levee Unit 17, Wabash River
- Mason J. Niblack Levee
- Orleans
- Raccoon Levee
- Sugar Creek
- West Terre Haute
- Brookville Reservoir
- Mansfield Reservoir

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

Iowa:
- Des Moines
- Green Bay Levee & Drainage District No. 2
- Flint Creek Levee District No. 16
- Muscatine Island Levee District and Muscatine-Louisa County Drainage District No. 13, Muscatine and Louisa Counties
- Muscatine
- Mystic
- Sabula
- Sioux City
- Upper Iowa River
- Rathbun Reservoir
- Red Rock

Kansas:
- Abilene
- Lawrence
- Manhattan
- Marysville
- Merriam
- Osawatomie
- Ottawa
- Salina
- Cedar Point Reservoir
- Council Grove Reservoir
- Elk City Reservoir
- Fort Scott Reservoir
- Garnett Reservoir
- Hillsdale Reservoir
- Marion Reservoir
- Melvern Reservoir
- Milford Reservoir
- Perry Reservoir
- Pomona Reservoir
- Strawn Reservoir

Kentucky:
- Lewisport
- Sturgis
- Vanceburg
- Westpoint
- Buckhorn Reservoir
- Nolin Reservoir
- Number 2 Barren Reservoir
- Number 2 Green Reservoir

Louisiana:
- Amite River and Tributaries
- Bayou Bartholomew

Massachusetts:
- East Brimfield Reservoir
- Hodges Village Reservoir
- Worcester

Michigan: Battle Creek

Missouri:
- Bear Creek Reservoir near Hannibal
- Canton
- Des Moines and Mississippi River Levee District No. 1
- Fabius River Drainage District
- Marion County Drainage District
- St. Louis
- South River Drainage District
- Hackleman Corner Reservoir
- Joanna Reservoir
- Kasinger Bluff Reservoir
- Pomme de Terre Reservoir

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

Montana:
- Billings
- Columbia River local protection, Mont.:
  - (*a*) Clark Fork at Missoula
  - (*b*) St. Regis River
- Harlem
- Miles City

Nebraska:
- Battle Creek
- Beatrice
- Giles Creek
- Hubbell
- Norfolk
- Pierce
- Waterloo
- Westpoint

Nevada:
- Truckee River and Tributaries, Calif. and Nev.
- Mathews Canyon Reservoir
- Pine Canyon Reservoir

New Hampshire:
- Hopkinton-Everett Reservoir

New Mexico:
- Albuquerque
- Artesia
- Bluewater Floodway
- Los Esteros-Alamogordo Reservoir
- Two Rivers Reservoir

New York:
- Allegheny
- Dansville
- Endicott, Johnson City, and Vestal
- Hammondsport
- Ithaca (active unit)
- Watkins Glen
- Davenport Center Reservoir
- Genegantslet Reservoir
- South Plymouth Reservoir
- West Oneonta Reservoir

North Carolina: Wilkesboro Reservoir

North Dakota:
- Lower Heart River
- Marmarth

Ohio:
- Adena
- Dillonvale
- Middleport
- Reno Beach-Howard Farms
- Roseville
- Ceasar Creek Reservoir
- East Fork Reservoir
- Frazeysburg Reservoir

Oklahoma:
- Brown Creek
- Enid
- Boswell Reservoir
- Hugo Reservoir
- Keystone Reservoir
- Pensacola Reservoir

Oregon:
- Columbia River local protection, Oreg.:
  - (*a*) Grande Ronde River
  - (*b*) John Day River
  - (*c*) Malheur River
  - (*d*) Prineville Area
  - (*e*) Umatilla River

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

Oregon—Continued
- Johnson Creek
- Lower Columbia River bank protection, Oreg.
- Lower Columbia River levees at new locations, Oreg.:
  - (*a*) Clatskame River Area
  - (*b*) Hayden Island
- Malheur Improvement District
- Pendleton
- Pudding River
- Lower Columbia River improvement to existing works, Oreg.:
  - (*a*) Beaver Drainage District
  - (*b*) Clatskame Drainage District
  - (*c*) Clatsop County Drainage District No. 1
  - (*d*) Deer Island Drainage District
  - (*e*) John Drainage District
  - (*f*) Magruder Drainage District
  - (*g*) Midland Drainage District No. 1
  - (*h*) Multnomah Drainage District No. 1
  - (*i*) Peninsula Drainage District No. 1
  - (*j*) Peninsula Drainage District No. 2
  - (*k*) Rainier Drainage District
  - (*l*) Sandy Drainage District, constructed by local interests (Not counted)
  - (*m*) Sauvie Island Drainage District
  - (*n*) Scappoose Drainage District
  - (*o*) Tenasillahee Island, Clatsop County Diking District No. 6
  - (*p*) Woodson Drainage District
- Willamette River Basin channel improvement and major drainage, Oreg.:
  - (*a*) Area east of Albany
  - (*b*) Ash Creek
  - (*c*) Ash Swale
  - (*d*) Bear Creek
  - (*e*) Beaver Creek
  - (*f*) Calapooya River
  - (*g*) Coyote and Spencer Creeks
  - (*h*) East Muddy and Lake Creeks
  - (*i*) Ferguson Creek
  - (*j*) Flat Creek
  - (*k*) Mud and Baskett Sloughs
  - (*l*) Salt Creek
  - (*m*) Shelton Ditch
  - (*n*) Soap Creek
  - (*o*) Turner Prairie
  - (*p*) West Muddy Creek and Marys River
- Willamette River Basin, snagging and clearing
- Blue River Reservoir
- Fall River Reservoir
- Holley Reservoir

Pennsylvania:
- Allentown
- Bethlehem
- Reynoldsville
- Ridgeway
- St. Marys
- Uniontown
- Allegheny River Reservoir, N. Y. and Pa.
- Blanchard Reservoir
- Curwensville Reservoir
- Dyberry Reservoir
- Kettle Creek Reservoir
- Prompton Reservoir
- Shenango River Reservoir
- Stillwater Reservoir

Tennessee: Lake City

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

Texas:
- Burleson County Improvement District
- Eastland
- Kenedy
- Lampasas Improvement District
- Mill Creek
- Navidad and Lavaca Rivers
- Pecos
- San Antonio
- Sulphur River and tributaries
- Cooper Reservoir
- Ferguson Reservoir
- Gonzales Reservoir
- Lampasas Reservoir
- Laneport Reservoir
- Navarro Mills Reservoir
- Proctor Reservoir
- Somerville Reservoir
- Waco Reservoir

Utah:
- Salt Lake City
- Spanish Fork River

Vermont:
- Rutland
- East Barre Reservoir (Mod.)
- Gaysville Reservoir
- Island Reservoir
- North Hartland Reservoir
- North Springfield Reservoir
- Townshend Reservoir
- Victory Reservoir
- Waterbury local protection
- Waterbury Reservoir (Mod.)
- Wrightsville Reservoir (Mod.)

Washington:
- Colfax
- Columbia River Local Protection, Washington:
  - (*a*) Crab and Wilson Creeks
  - (*b*) Entiat River
  - (*c*) Lower Cowlitz River
  - (*d*) Lower Walla Walla River
  - (*e*) Metlow River
  - (*f*) Mill Creek, not economically justified (not counted)
  - (*g*) Okanogan River
  - (*h*) Palouse River
  - (*i*) Randle Area
  - (*j*) Touchet River
  - (*k*) Wenatchee River
  - (*l*) Yakima River at Ellensburg
- Dayton
- Lower Columbia River improvement to existing works, Wash.:
  - (*a*) Bachelor Island Area (active unit)
  - (*b*) Cowlitz County Consolidated Diking Improvement District No. 1
  - (*c*) Cowlitz County Consolidated Diking Improvement District No. 2
  - (*d*) Cowlitz County Diking Improvement District No. 2
  - (*e*) Cowlitz County Diking Improvement District No. 13
  - (*f*) Cowlitz County Diking Improvement District No. 15
  - (*g*) Wahkiakum County Consolidated Diking District No. 1
  - (*h*) Wahkiakum County Diking District No. 4
- Lower Columbia River levees at new locations, Wash.:
  - (*a*) Kalma River
  - (*b*) Washougal Area
- Pullman
- Raymond

FLOOD CONTROL PROJECTS (WITHOUT POWER), ACTIVE, NOT YET STARTED—Continued

West Virgina:
- Wheeling-Benwood
- Summersville Reservoir

Wyoming:
- Buffalo
- Dayton
- Jackson Hole
- Sheridan

Total, 327 projects.

FLOOD CONTROL PROJECTS, GENERAL MULTIPLE PURPOSE INCLUDING POWER

COMPLETED FOR BENEFICIAL USE

Arkansas:
- Bull Shoals Reservoir, Ark. and Mo.
- Narrows Reservoir, Ark.
- Norfork Reservoir, Ark. and Mo.

California: Folsom Reservoir

Georgia:
- Allatoona Reservoir
- Clark Hill Reservoir

Kentucky:
- Dale Hollow Reservoir, Ky. and Tenn.
- Wolf Creek Reservoir

Missouri:
- Bull Shoals Reservoir, Ark. and Mo. (See Arkansas)
- Norfork Reservoir, Ark. and Mo. (See Arkansas)

North Carolina: John H. Kerr Reservoir, N. C. and Va.

Oklahoma:
- Denison Reservoir, Okla. and Tex.
- Fort Gibson Reservoir
- Tenkiller Ferry Reservoir

Oregon:
- Detroit Reservoir
- Lookout Point Reservoir

South Carolina: Clark Hill Reservoir (See Georgia)

Tennessee:
- Center Hill Reservoir
- Dale Hollow Reservoir, Ky. and Tenn. (See Kentucky)

Texas:
- Denison Reservoir, Okla. and Tex. (See Oklahoma)
- Whitney Reservoir

Virginia:
- Bluestone Reservoir, Va. and W. Va.
- Philpott Reservoir
- John H. Kerr Reservoir (See North Carolina)

West Virginia: Bluestone Reservoir, Va. and W. Va. (See Virginia)

PROJECTS UNDERWAY

Arkansas: Blakely Mt. Reservoir, Ark.

Georgia: Hartwell Reservoir, Ga. and S. C.

Idaho: Albeni Falls Reservoir, Idaho

Missouri: Table Rock Reservoir, Mo.

Nebraska: Gavins Point Reservoir, Nebr.

North Dakota: Garrison Reservoir, N. Dak.

Oklahoma: Eufaula Reservoir, Okla.

Oregon:
- Cougar Reservoir, Oreg.
- Hills Creek Reservoir, Oreg.

South Dakota:
- Fort Randall Reservoir, S. Dak.
- Oahe Reservoir, S. Dak.

Texas: Belton Reservoir, Tex.

FLOOD CONTROL PROJECTS, GENERAL MULTIPLE PURPOSE INCLUDING POWER—Con.

NOT STARTED

Arkansas:
Beaver Reservoir
Greer's Ferry Reservoir
Kentucky: Booneville Reservoir
Missouri: Stockton Reservoir
Montana: Libby Reservoir
Oregon:
Green Peter Reservoir
Waldo Lake Tunnel
South Dakota: Big Bend Reservoir
Virginia: Gathright and Falling Springs Reservoir
Washington: Priest Rapids Reservoir

The estimated cost of these 40 projects is $3.2 billion of which $1.5 billion has been appropriated to date, leaving a balance to be appropriated of $1.7 billion; thus a total of those 2 figures, $3.2 and $1.7 billion, is $4.9 billion to be appropriated.

In addition, the program for flood control on the Mississippi River and tributaries has an estimated cost of one billion four hundred thirty-seven million dollars. Including the appropriations for fiscal year 1956, $918 million has been appropriated, leaving a balance to be appropriated of $519 million.

At the present rate of appropriation and assuming no new projects are authorized, it will take aproximately 25 years to complete the presently active flood-control program including those multiple-purpose projects with flood control as a primary function.

Now, proceeding to the next question which was asked, operation and maintenance.

The budget estimate for operation and maintenance of flood-control projects during fiscal year 1957 amounts to $3,950 million and provides for requirements at 103 flood-control reservoir projects and 18 local protection projects. In addition, the budget includes $11,830,000 for operation and maintenance of 32 multiple-purpose projects, some of which provide for control of flood waters.

During fiscal year 1956, $4,115,000 is available for operation and maintenance of flood-control projects.

For multiple-purpose projects, $11.1 million is available in fiscal year 1956 for maintenance and operation of 30 projects.

I shall now proceed to the next subject which is the Northeast and West Coast floods of 1955 and 1956.

During 1955 and early 1956, several regions in the United States suffered unprecedented disastrous floods which ranked among the most destructive in the country's history.

In August, hurricane Diane caused intensive precipitation in the Northeast States from Maine to North Carolina, which resulted in record floods in many parts of the area. In portions of this region flooding again occurred in October. A preliminary evaluation of results of a damage survey gives a total damage figure of $677 million for the August flood in the Northeast States, of which $521 million is for the New England area and $156 million for the remaining part of the region.

As a result of the August floods, 188 lives were lost, and 17 lives were lost in Connecticut as a result of the October floods. California, Nevada, and Oregon experienced devastating floods during

December and January. Very preliminary figures indicate resulting damage from these floods of about $152 million.

The next subject is the flood-control investigation program.

The number of flood control studies now outstanding is 470, and the estimated cost is $26.2 million, of which $12.8 has been appropriated through fiscal year 1956, leaving $13.4 million to complete.

One million six hundred fifty thousand dollars for the current fiscal year provides for completion of 52 reports and continuation of 62 others in the regular report program.

An additional $299,000 appropriated by the fiscal year 1956 supplemental bill provided for initiation of the Northeast Flood Study. One million six hundred fifty thousand dollars in the fiscal year 1957 budget will permit work on 106 reports, of which 62 will be completed and 44 continued.

I shall now pass to the subject of the two large special reports—the NENYIAC Report and the AWR Report.

The status of the New England-New York Interagency Committee Report, which is abbreviated NENYIAC and pronounced "knee-knee-ack," and the Arkansas-White-Red River Basin Interagency Committee Report, called the AWR Report, and work accomplished under Public Works Committee Resolutions of 14 September and 21 November 1955, are as follows:

First, the NENYIAC report: A survey of the resources of the New England-New York region has been a joint venture among 7 Federal agencies and the 7 States concerned. The report constitutes a comprehensive inventory of the land and water resources and presents broad, correlated plans for the overall development, utilization, and preservation of all resources for the greatest common good. Comments on the report have been received from the Federal agencies and the States. In view of the large damage in the Northeastern United States caused by the hurricane floods of August and October 1955, each of the Governors of the New England States and New York State was asked after the floods whether he wished to make any further comments on the report. These comments have been received. Letters from the Chief of Engineers to the Secretary of the Army commenting on the report and from the Secretary of the Army transmitting the report to the President, are being drafted and will be dispatched in a few days.

Now, the AWR report. The report on conservation and development of the water and land resources of the Arkansas, White, and Red River Basins has been completed by the Arkansas-White-Red River Basin Interagency Committee. That committee was composed of field representatives of 7 Federal agencies and the 8 States concerned.

The report of the committee presents a long-range plan for development of the water and land resources of the AWR Basins. The report by itself is not expected to serve as a basis for Congressional authorization of any federally sponsored project or program, but to provide Congress a framework within which to consider future, separate recommendations for authorization or appropriation of funds.

The interagency committee recommended that the long-range plan described in the report be adopted as a basis for future development of the water and related land resources of the Arkansas, White, and Red River Basins. Comments have been received by the Secretary

of the Army from all States and Federal agencies involved in the AWR report.

A joint letter to be signed by the heads of the seven Federal agencies transmitting the report to the President has been prepared and signatures are being obtained.

I will now pass to the third subject that I mentioned as being a special type of study—that is the work accomplished under resolutions of September 14 and November 21, 1955.

Pursuant to Senate Public Works Committee Resolutions of September 14 and November 21, 1955, the flood-control investigations program has been accelerated in the northeast area. Funds totaling $299,000 were appropriated for this purpose in the urgent deficiency appropriation act, 1956, approved February 14, 1956, thus enabling work to get under way this fiscal year. Streams to which funds were allotted comprise the Connecticut, Thames, Blackstone, Merrimack, Housatonic, Rondout, Passaic, Lehigh, Lackawanna, Lackawaxen, Delaware at Stroudsburg, and the Potomac.

A number of interim reports will be prepared on the most critical areas. Individual reports will be complete in themselves for the respective areas or subbasins and will form an integral part of an overall basin plan.

Interim reports planned for field completion in fiscal year 1956 are: (1) Westfield River, a tributary of the Connecticut River including consideration of Littleville Dam and Reservoir, Mass.; (2) Farmington River, a tributary of the Connecticut River including a possible diversion plan, upstream reservoirs, and local protection for Winsted, Conn.; (3) Naugatuck River, a tributary of the Housatonic River, including consideration of reservoirs and local protection works for Ansonia, Seymour, Beacon Falls, Naugatuck, Waterbury, Thomaston and Torrington, all in Connecticut.

You will recall that the Naugatuck River Valley was the one which received the greatest damage in the Diane floods of August 1955.

We also are proceeding with hurricane investigations in accordance with Public Law 71, 84th Congress, approved June 15, 1955. That law authorized a study of the coastal and tidal areas along the eastern and southern seaboards of the United States with respect to hurricanes with particular reference to areas where severe damages have occurred. This study is to include the obtaining of data on the behavoir and frequency of hurricanes and the determination of methods of forecasting their paths and improving warning services and of possible means of preventing loss of human lives and damages to property with due consideration of the economics of proposed structures which might be required. An amount of $1 million was appropriated for this study for fiscal year 1956.

In order to provide for the best use of funds, emphasis is being placed upon investigation of those areas where severe damage has occurred and where there appears to be some likelihood of development of a feasible solution. Less seriously damaged areas are initially receiving a general appraisal with a view to determining whether further studies are warranted. Areas where detailed studies are in progress include Narragansett Bay, R. I. and Mass.; New Bedford-Fairhaven, Mass.; the south shore of Long Island from Jones Inlet to Montauk Point, N. Y.; Wrightsville and Carolina Beaches, N. C.——

Senator BUSH. General, you did not mention New London, Conn., or Stamford, Conn. I thought that there had been work started on the hurricane survey.

General ITSCHNER. There has been some work accomplished at those two places, sir, but the work has progressed more rapidly at Narragansett Bay and New Bedford because those areas lend themselves, perhaps, better to remedial construction.

Senator BUSH. I see.

General ITSCHNER. Wrightsville and Carolina Beaches are in North Carolina, and Myrtle Beach which has been badly hit by hurricanes as you will recall, is in South Carolina; and then Lake Pontchartrain and vicinity in Louisiana, just outside of New Orleans; and Galveston, Velasco, Port Arthur, and Corpus Christi on the Texas coast.

Since this investigation is a new field in many respects much technical data remain to be developed. Some of the factors being studied are the characteristics and frequencies of hurricanes, improvement in hurricane forecasting, warning and rescue services, effect of hurricanes on tide and wave buildup in both the open ocean and bay areas, and the effect of structures such as dams and barriers on water levels, currents, salinity, temperature, sedimentation, pollution, fish and wildlife, and navigation. All facilities of the Corps of Engineers, including the Beach Erosion Board, and the United States Waterways Experiment Station located in Vicksburg, are being utilized. This is being supplemented by use of outside talent from universities and other consultants through contract.

For example, the development of mathematical formulae necessary for the determination of the maximum probable hurricane and project design hurricane tidal levels and wave heights against which protection should be provided has been contracted to a university.

Full cooperation is also being maintained with the United States Weather Bureau and other Federal agencies. The Weather Bureau has certain responsibilities for hurricane research separate and apart from activities to be accomplished under Public Law 71. Full use will be made of such information and in addition, the Weather Bureau is undertaking specific work assignments in connection with Public Law 71, primarily with respect to hurricane frequencies and characteristics, development of improved hurricane forecasting, warning plans, and related factors. Necessary funds for such work assignments have been transferred to the Weather Bureau from the Corps of Engineers from the funds appropriated for the overall investigation.

Three years will be required to fully complete the survey for the Northeastern States. The survey probably will be extended to a fourth year, possibly even to a fifth year along the gulf coast. However, interim or separate reports will be made in specific areas where such studies permit final conclusions to be reached. The first interim reports will be those on Narragansett Bay, Rhode Island, and the New Bedford-Fairhaven estuary in Massachusetts, which are expected to be submitted to the Congress early in 1957.

Both of these investigations are well underway; preliminary studies are in progress to evaluate at least 12 proposals for hurricane protection in the Narragansett area and at least 7 proposals in the New Bedford-Fairhaven area. These preliminary studies will eliminate the more costly and less effective proposals.

Among structures being considered are rock barriers and earth dikes and dams with rock toes and slopes; construction of a model of the Narragansett Bay area is nearing completion at the United States Waterways Experiment Station at Vicksburg, and limited tests under low-flow conditions have been started.

Collection of field data and hydrographic surveys are also in progress. Information developed in connection with the studies in the aforementioned two areas will be used where applicable for other study areas along the eastern and southern seaboards of the United States.

Although the investigations in the other areas have not progressed to the same extent as Narragansett and New Bedford they are being prosecuted to the maximum practicable degree.

Senator BUSH. General, would you mind just pausing for 2 minutes so that we could get a rundown on just what they propose to do in that—he speaks of barriers and so forth. Would you object to that?

Senator KERR. Not at all, if the general is in a position to give it to you.

Senator BUSH. That is a very big thing in that area. You remember Providence, R. I., was flooded and the water was up halfway on the first floors in the stores and banks there. This is very interesting for that reason. We want to stop that, if possible. Could you just give us——

General ITSCHNER. Yes, sir. If you do not mind, Mr. Brennan is at the map and I would like to ask him to explain the several alternative solutions being investigated.

Senator BUSH. I would be delighted to have him do that.

Mr. BRENNAN. The problem in Narragansett Bay, Mr. Chairman, arises from flooding from the hurricane forces throughout the entire length of the bay. Water elevation is raised from the force of the hurricane winds at the entrance to the bay and gets increasingly greater as the bay becomes narrower toward the north end or the vicinity of Providence. Complete protection of the entire area would be virtually impossible since it could be done only by building a barrier or dike completely around the bay, so an effort is being made to determine the effect of structures built across the entrance and at various points inside the bay. One possible plan would be to construct either underwater barriers or above-water barriers partially closing the bay at these openings at the mouth, so that the high-water elevation from the hurricanes would not have sufficient opportunity to travel through the entire length of the bay. In effect it would be a "choking off" plan. In addition——

Senator KERR. On the theory that what did not get in at the mouth could not be in above?

Mr. BRENNAN. That is correct, Mr. Chairman.

In order to investigate all possible alternatives, barriers are being considered not only at the mouth, but at various points up the bay.

One variation of the barrier would be a subsurface dam as indicated in this figure [indicating] extending part way across one of the openings [indicating].

The second major type of protection being considered is dikes or barriers in the vicinity of the most severely flooded area, Providence, which has a highly concentrated development and which suffered

major damage during the hurricane floods. It could be protected by a barrier built across the bay at the very upper end. This barrier could be located at any one of 10 or 12 different locations, varying from a location near Conimicut Point to a location just below Providence itself. These barriers, since they would be entirely across the bay and would extend above the suface of the water, would have to have conduits through them to permit the outflow from the Providence River to be passed through them into the bay. Others may require gates to permit ship passage.

The problems in engineering and in economics are very complex and require, as General Itschner pointed out, the construction of a model of the entire bay to study the effect of the various barriers and the effect of the wind forces within the bay.

Plans have been developed and costs have been estimated for some of these locations through the use of architect-engineer firms, but there has not been, yet, any final conclusions on the possible economic differences among these or among, for that matter, any of the plans throughout the bay area.

Senator KERR. Thank you sir. Any questions?

Senator HRUSKA. I have a question. Is the terrain at those points where you first indicated barriers' way at the bottom such that the barriers are practical without any build up of the shoreline?

Mr. BRENNAN. Yes, sir; these barriers at the entrance here would probably be subsurface dams, that is, they would be barriers constructed across the entrance, the top being below the surface of the water. The effect would be merely to restrict the waterway area in the inlet so that the water would have less passageway to get through; they would tie into the shore but they would not extend above the surface of the water.

There are, of course, plans also being considered whereby the barriers would be low dams extending above the surface of the water, but with very wide openings for vessel traffic and for the normal tidal flow back and forth.

Does that answer your question, Senator?

Senator HRUSKA. Yes, sir.

General ITSCHNER. It is expected that the first interim reports on the other areas will reach the Congress shortly after the Narragansett-New Bedford reports with the remainder following at intervals through 1957, 1958, and into 1959, when the overall comprehensive report will be submitted.

I will now pass to the subject——

Senator BUSH. General, may I ask a question?

General ITSCHNER. Yes, sir.

Senator BUSH. On this map I see these numbers, I take it that No. 1, that is the Narragansett Bay area. Are those numbers meant to indicate the sequence in which these studies may be taken up or——

General ITSCHNER. No, sir; it just happens that Narragansett Bay is the highest priority study we have.

Senator BUSCH. And New Bedford is the second?

General ITSCHNER. That is right.

Senator BUSH. But that does not indicate necessarily that that Stamford area is third or New London area fifth?

General ITSCHNER. No, sir; we used the numbers on the reports for convenience.

Senator BUSCH. I see.

General ITSCHNER. Now passing to the subject of emergency disaster relief work by the Corps of Engineers.

The Corps of Engineers has had occasion to perform emergency disaster relief work as construction agent for the Federal Civil Defense Administration during the past year. In the performance of these functions the corps has looked to the Federal Civil Defense Administration to resolve any questions which might arise with respect to interpretation or limitations of Public Law 875, 81st Congress, September 30, 1950, which is the Charter Act for the Federal Civil Defense Administration.

Now, as to the activities of the Corps of Engineers under the emergency flood-control program authorized by Public Law 99, 84th Congress, and section 9 of the 1936 Flood Control Act.

The activities of the Corps of Engineers carried on under the emergency flood-control program authorized by Public Law 99 may be divided into three categories: First, preflood preparation; second, flood fighting and rescue work; and third, postflood rehabilitation.

A similar program specifically for certain Mississippi River tributaries is authorized by section 9 of the Flood Control Act approved June 15, 1936. Preflood preparation includes study of potential flooding from melting snow and excessive precipitation, preparation of emergency operating plans, and stockpiling of equipment and supplies.

Flood fighting and rescue operations of the Corps of Engineers are designed to supplement the work of other agencies at the request of the governor of the affected State. All activities are fully coordinated with State and local officials, the Red Cross, the United States Weather Bureau, Army commanders, National Guard, Federal Civil Defense Administration, and other participating agencies. The repair and restoration of flood-control structures following a flood consist of work designed to restore normal effectiveness against floods. During the 5-year period 1951–55, expenditures by the corps totaled $59,862,000 under Public Law 99 and antecedent legislation, and $1,307,000 under section 9, Mississippi River and tributaries, or average annual expenditures of $12 million and $260 million, respectively.

Senator KERR. And what?

General ITSCHNER. $260,000, respectively, excuse me.

During the first 8 months of fiscal year 1956 expenditures under Public Law 99 and section 9 have been $4,703,858 and $85,597, respectively.

Now, with regard to section 205, Flood Control Act of 1948 and section 212, Flood Control Act of 1950, which is what this committee is now most concerned with, I shall now present a résumé of our experience and the position of the Chief of Engineers with respect to the authority extended to the Chief of Engineers to construct small flood-control projects not specifically authorized by Congress.

Section 205 of the Flood Control Act of 1948 imposed an individual project limitation of $100,000 and an overall annual limitation of $2 million. Section 212 of the Flood Control Act of 1950 increased these amounts to $150,000 and $3 million, respectively. To date, 43 projects with a total Federal cost of $4,464,000 have been completed or are under construction. Five of these projects with a

total Federal cost of $712,000 were approved for construction during fiscal year 1956.

The Chief of Engineers——

Senator KERR. Do you have a tabulation of those in your statement?

General ITSCHNER. Yes, sir; I shall have those for insertion in the record, sir.

Senator KERR. All right. Those figures will be put in the record at this point when they are received.

(The information referred to is as follows:)

Small local protection projects not specifically authorized by Congress—Sec. 205 of the 1948 Flood Control Act as amended by Sec. 212 of the 1950 Flood Control Act

[Status as of Mar. 29, 1956]

No.	State	Project location	Federal cost	Estimated non-Federal cost	Construction status
1	Alabama	Black Creek, Gadsden	$125,400	$34,000	Completed.
2	California	Mad River, Blue Lake	146,200	37,300	Do.
3	Colorado	Pinon Canyon, Trinidad	130,700	32,500	Do.
4	do	Westerly Creek, Denver	150,000	72,000	Do.
5	Connecticut	Norwalk River, Norwalk	52,200	2,800	Do.
6	Georgia [1]	Beaver Creek, Montezuma	150,000	57,000	Project recently approved.
7	Idaho	Graves Creek, Cottonwood	75,500	2,500	Completed.
8	do	Salmon River, Tomanevich Salmon City.	91,400	11,000	Do.
9	do	Little Wood River, Gooding	60,400	2,500	Do.
10	Indiana	Grassy Creek, Jackson County	70,300	25,400	Do.
11	Kansas	Stonehouse Creek	142,600	102,300	Do.
12	Louisiana	Bayou Choupique	121,900	49,000	Do.
13	do	Bayou Rapides	95,200	40,000	Do.
14	Minnesota	Okabena Creek, Worthington	77,600	57,000	Do.
15	Mississippi	Gordon Creek, Hattiesburg	83,000	43,000	Ready for construction.
16	do	Sowashee Creek, Meridian	143,500	21,000	Completed.
17	Missouri	Missouri River, New Haven	140,000	7,600	Do.
18	Montana [1]	Yellowstone River, West Glendive.	150,000	31,900	Project recently approved.
19	do	Shields River, Clyde Park	25,800	1,500	Completed.
20	Nebraska	Big Blue River, Seward	126,900	148,000	Do.
21	New Hampshire [1]	Cochoco River at Farmington	128,000	8,000	Project recently approved.
22	New York	Newton Creek, Bainbridge	150,000	154,500	Do.
23	do	North Branch, Susequehanna River, Conklin-Kirkwood.	79,000	15,000	Completed.
24	do	Birdsall Creek, Green	37,000	18,500	Do.
25	do	Chenango River, Norwich	94,500	3,000	Do.
26	do	Owego Creek, Owego	40,000	10,000	Do.
27	Ohio	Lake Erie, Camp Perry	150,000	191,500	Do.
28	Oregon	Mollalla River, Mill Creek	55,000	3,000	Do
29	do [1]	Coos River, Catching Inlet	136,300	11,100	Project recently approved.
30	do	Clackamas River, Carver	44,200	7,700	Completed.
31	do	Mollalla River, Bessel location	39,300	1,000	Do.
32	Pennsylvania	Chester River, Chester	114,000	1,000	Do.
		Chester River, additional	69,200	1,000	Do.
33	do	Raccoon Creek, Burgettstown	83,100	5,000	Do.
34	do	Granville Creek, Washington County.	75,900	4,000	Do.
35	do	Raccoon Creek, Slovan	57,800	3,000	Do.
36	South Dakota	Spring Creek, Herreid	45,800	2,800	Do.
37	Tennessee	South Fork, Forked Deer, Nixon Creek.	62,800	18,000	Do.
38	Texas	San Diego Creek, Alice	145,700	40,100	Do.
39	Texas [1]	Tranquitas Creek, Kingsville	148,000	42,000	Project recently approved.
40	do	Atascosa River, Pleasanton	122,800	23,000	Completed.
41	Virginia	North River, Bridgewater	136,500	29,400	Do.
42	Wisconsin	Ball Park Creek, Bayfield	140,700	59,200	Do.
43	do	Oconto River, Oconto	150,000	3,500	Nearing completion.
	Total		4,464,200	1,433,600	

[1] Projects approved for construction during fiscal year 1956.

General ITSCHNER. The Chief of Engineers basically supports the premise that major projects should be specifically authorized by the Congress but recognizes the usefulness of authority to undertake small flood-control projects without going through the detailed survey and authorization process.

The Chief of Engineers considers that an increase in the individual project limitation from the $150,000 authorized in 1950 to $250,000 and an increase in the annual appropriation limitation from $3 million to $5 million to adjust for the increased price level since 1950 and to provide some flexibility for future fluctuations in prices is reasonable and warranted.

If the Congress should decide to expand the authorization to an individual project limitation of $500,000, a commensurate annual appropriation limitation would be $10 million. Should the Congress expand the existing authority the Chief of Engineers assures you that he will proceed vigorously to accomplish such a program.

Senator KERR. In that connection, what would be your opinion of the comparative merit of authorization to include bank stabilization and repair to the extent of the same amount as that authorized in the individual flood-control project?

General ITSCHNER. We have not yet been asked to comment on Senator Jackson's bill and we have not, therefore, made a real study of the effect of that bill. At this time we have no authority for bank protection emergency work as such except for a limited number of cases where protection of public works is involved. Frequently, in providing flood-control protection we must accomplish some bank-protection work, but there is a large field for additional bank-protection work for which we have no emergency authority at this time.

We realize that there is a great need for that type of work. On the other hand, we appreciate that the cost of that work would likewise be very great and it is something that should be considered very carefully both by the Chief of Engineers in making his recommendation and by the congressional committees to determine whether they desire to get into this large new field of work.

Senator KERR. In that connection, what would be the position of the Corps of Engineers with reference to adequacy of staff to meet the situation that would be created by the passage of one of these bills, if it were to be passed, let us say, on the basis that you have suggested of $250,000 for the individual project and $5 million for the total for the year, and then the same with reference to the situation where the limitation would be $500,000 and $10 million?

General ITSCHNER. I do not think that there would be any problem with respect to the staff of the Corps of Engineers with either amount, sir, because, after all, the real governing factor is the appropriation that we would receive for it. The amount that we have received in the past few years for section 212 work has not been very great, so that during the current year I believe we have just five section 212 projects under way. So, our staff would be adequate to take care of a somewhat increased program under the section 212 authority.

Senator KERR. Are there any questions?

Senator BUSH. If the Chairman would permit, I would just like to insert in the record at this point, because it is right in the point with what the general has just been saying. Question No. 13 which I asked

at the previous hearing and the answer to that question because it bears right on this point in the general's testimony.

In clearing the channels of the Naugatuck and other rivers in Connecticut, the corps has deposited earth and rock spoil on the banks in the form of dikes. Can these structures be made permanent and effective flood-control works within the limitation of the $150,000 on individual projects now contained in section 205 of the Flood Control Act of 1948 and section 212 of the Flood Control Act of 1950?

And the answer which has come from the Chief of Engineers' Office is this:

None of those structures can be made permanent within the limitations of $150,000, on individual projects now contained in section 205 of the 1948 Flood Control Act and section 212 of the 1950 Flood Control Act. The material excavated from the streams was shaped, in general, to resemble a dike, and every effort was made to remove debris and other objectionable matter from the spoil. However, there is no certainty that all debris, etc., was removed and the spoil should be investigated before it is incorporated within a permanent structure. Furthermore, most of the excavated material is of a pervious nature and would require a cut-off trench along the riverside toe and an impervious blanket on the riverside slope. The impervious material would have to be hauled in from quite a distance. In addition, stoplog structures would have to be constructed at certain locations. Although this material is deposited along the bank of the streams, most of it would have to be reshaped and realined into permanent structures. To provide permanent and effective flood-control works out of the embankment would cost in excess of $150,000 for any individual unit.

And the second question and last question I want to get in, question 14.

If they are not made permanent, is there not a strong likelihood that another flood or floods will wash them down the river, resulting in a loss of funds already expended?

Answer:

During another flood or floods, some of this stockpiled embankment could be washed downstream.

I think that is the principal argument in favor of the subject bill, that if we give this authority to the engineers it is an investment that will be made to prevent a loss of previous investment or capital put in to do a temporary job, in the long run it would seem to me that the evidence we have is that this, in the long run, is the economical thing to do—now.

Senator KERR. Well, I think that is a logical conclusion.

I would like at this point to ask General Itschner this question.

The same observation, I am sure, could be made with reference to work done under any authorization that we might pass, might it not?

In other words, if this bill were passed to where you would have $500,000 on an individual project there would be a number of them that would come along or could come along where, having spent that amount of money, it would equally be in jeopardy by reason of the fact with reference to that particular project it was not six hundred or seven hundred thousand dollars?

General ITSCHNER. Yes, sir; Mr. Chairman. The amount of limitation regardless of what it is, would permit accomplishment of a certain number of projects and the next increment of authority would permit accomplishment of another greater number, of course.

Senator BUSH. Might I observe on that, Mr. Chairman?

Senator KERR. Certainly.

Senator BUSH. Of course, the thought that occurs to me in answer to that observation is that we are talking about giving the engineers a chance to make a permanent repair instead of a temporary repair. Now, they are not going to make the repair except within the limit of the $500,000 if that is the amount we will approve.

Of course, they might do more work with a larger appropriation and take on more area, but my point is that within the limits of the amount given them, whether it be two hundred fifty or five hundred thousand dollars, what they do will be permanent and we do not run the risk of wasting the money.

Senator KERR. Well, the provision of the bill before the committee —is not the provision of the bill before the committee similar to that, the provisions of section 212 of 1950 and 205 of 1948 except as to amount?

Senator BUSH. I believe it is. I did not say anything in conflict with that, did I?

Senator KERR. I thought that you intimated that anything done under the present bill, if enacted into law, would be permanent as contrasted to something which had been done under one of the previous sections which was not permanent.

Senator BUSH. The general will correct me if I am wrong, but the temporary work which has been done and which I referred to has not been under that, but has been under Public Law 875.

General ITSCHNER. That is correct, most of the temporary work was done under another authority, under the Federal Civil Defense Administration's authority, under their Charter Act, Public Law 875, and it is strictly temporary work.

Senator KERR. Would the work which was done under that law be an example of what you contemplate doing under the proposed law?

General ITSCHNER. No, sir; this work would be permanent work. The work under Public Law 875 has to be temporary work by the law.

Senator KERR. It could be temporary?

General ITSCHNER. Well, it can be no more——

Senator KERR. You might even repair something under that law which would result in a permanent improvement; might you not?

General ITSCHNER. I think you might, sir; but you may do so only if the cost of so doing is no greater than the cost of a temporary repair for that same work.

Senator BUSH. Senator, I do not believe the—the general will correct me if I am wrong—but I do not believe that there has been a single instance in which the law you refer to has been availed of in our State or even in New England since the floods of August 1949, where they had——

Senator KERR. But there are only five in the United States during this fiscal year.

General ITSCHNER. That is correct, and the statement of Senator Bush's also is correct. There have been none in New England for several years.

Senator BUSH. The point is that the inadequacy of that figure has been revealed by recent facts. Where they can do permanent work——

Senator KERR. I do not care to be in the posture of appearing to disagree with you on the objective that you have in mind, it just seems to me that the illustration you use that is foreign to the concept to the bill we are considering.

Senator BUSH. I do not know just what you mean by that, Senator.

Senator KERR. Well, I believe you just told us that the structures you refer to as being temporary were built under——

Senator BUSH. Under other authority.

Senator KERR Under another law which authorized the doing of repair which would ordinarily be temporary and the bill we have before us is for the construction of permanent flood-control projects.

Senator BUSH. That is right.

Senator KERR. Now, any construction that you made under section 212 of 1950 or section 205 of 1948, General, you would expect to be just as permanent as any you would do under one of the bills before us if enacted, authorizing the larger amount; would it not?

General ITSCHNER. Yes, sir; any work under section 212 or the proposed amendment to section 212 would be permanent work.

Senator KERR. Yes, and what you have been doing within the specifications of the $150,000 limitation have been just as permanent as what you would expect to do under an authorization for $250,000 or $500,000?

General ITSCHNER. That is correct, sir.

May I add one statement here, sir, in connection with the——

Senator KERR. What I am trying to get in my own mind and in the record is that we do not seek to increase the authorization for the individual project in order that you may cease building temporary flood-control projects under this law and start building permanent projects under this law?

General ITSCHNER. There is no difference in that respect, sir. The only difference is one of limitation.

Senator KERR. All right.

Senator HRUSKA. General, I notice in Public Law 516, 81st Congress, the language is used there of limitation in section 212 which amends section 205 of the 1948 Flood Control Act—

provided that not more than $150,000 shall be allotted for this purpose at any single locality from the appropriations for any 1 fiscal year.

Now, in these bills which we have before us, for example, S. 3272, the language is used in that same connection, I believe, subsection 1 on page 2—

not more than $500,000 shall be allotted for this purpose for any single project for expenditure any 1 fiscal year.

What comment would you have in regard to the difference in the words "project" in the one instance and "locality" in the other? Is there any significance to it?

General ITSCHNER. I would say there is no real significance to the difference in wording.

Senator HRUSKA. I do not know if that was consciously done or if it was not, but I wondered if there was any special meaning in that, locality in one instance and projects in another. I can see projects one succeeding the other and you stop at the one line and continue indefinitely with $500,000 or $150,000 respectively for each of those

units and, yet, each of them would be labeled a separate project. However, if it was limited by locality that probably would not be true.

General ITSCHNER. We would interpret the language to mean a limitation applicable to a project, a project being in a locality, and we would not apply the limitation to segments of a project which are related one to another.

Senator HRUSKA. Well, you cannot, under the present law, because it says "locality" and locality is a little easier to define and it has a lot more specific definition than project.

Now, a project can stop at a given point on the compass and another start from there and still be in the same locality.

Senator KERR. The language under discussion is not the General's language.

Senator HRUSKA. I understand that, I am asking him what construction he might be placing on it. Now, if they are synonymous——

General ITSCHNER. I would certainly interpret them as being synonymous, sir. While it is conceivable that there might be two jobs in the same locality, we would always consider them to be one project with this exception, there may be a navigation project and a flood-control project which are not related to each other, but otherwise the flood-control problem which we are considering here is such that each project in an area must be an integral part of the overall problem.

Senator KERR. If language in the report or in the bill indicated otherwise you would, of course, govern yourself accordingly?

General ITSCHNER. That is correct, sir.

Senator KERR. I think the point is a good one, Senator, and I think that either in the bill or the report that that should be made clear.

Actually, the term "locality" is subject to rather limited or rather extended interpretation.

Senator HRUSKA. I suppose so, but——

Senator KERR. I mean, you speak of the Southwest, that may be a locality——

Senator HRUSKA. I imagine the chambers of commerce——

Senator KERR. A number of localities in the ——

Senator HRUSKA. I was going to say maybe the chambers of commerce of that locality would object very much to not being called a region rather than a locality but I do not know that that is very pertinent.

Under the present law there would be nothing to prevent $150,000 one year on one project and next year another $150,000?

General ITSCHNER. Nothing in the law that would prevent it, but actually we have our own criteria to apply and we have always interpreted the law to mean that $150,000 must complete the project.

Senator HRUSKA. Without regard to the language in the bill which says that the maximum shall be "X" dollars in any one fiscal year.

General ITSCHNER. We have a more restrictive interpretation on it and we have to do that because we do not know what appropriation we are going to get the next year. We cannot very well start out on a project which we know is going to cost 4 times that amount or $600,000, let us say, and start it in one year with $150,000 and hope to get the funds for the following year, so we have actually applied that criterion. Furthermore, the appropriations have been so small as compared to the requirements for these projects that it would be unfair to those projects that we can complete for $150,000——

Senator KERR. Have the number of projects you have constructed been the result of limited appropriations, General, rather than a situation where you had the money and do not have places to use it?

General ITSCHNER. We have a great many requests for this type of work, sir, but we have been limited by the amount of appropriations.

Senator KERR. The appropriations, then, have not run up to the amount of authorizations?

General ITSCHNER. No, by no means, sir.

Senator HRUSKA. General Itschner, does the last sentence in section 212 bear on that interpretation when it reads, "That the work shall be complete in itself and shall not commit the United States to any additional improvement to insure its successful operation," and so forth?

General ITSCHNER. Well, we do require that the work be complete in itself. In other words, that there not be another project that must be constructed later in order to provide the necessary protection.

The legislative history on this act and the committee report indicates that it was the intent of Congress that the limitation established would be applied to a complete project which would be completed for that amount of money.

Senator HRUSKA. Within a given fiscal year?

General ITSCHNER. Would be completed within the amount of $150,000 total.

Senator HRUSKA. Well, that would lead me to think if the thing were drawn along that line in its original language that the words "within one fiscal year" are really superfluous, but that is——

General ITSCHNER. I think it certainly could be clarified and probably would be desirable.

Senator KERR. On page 2 of the bill, 3272, Senator Hruska, in section 4, at line 13, is similar limitations.

Senator HRUSKA. Yes, I think that language is about identical, Mr. Chairman.

Senator KERR. That is a smiliar limitation as what is to be found in section 212.

What was it, Senator Bush?

Senator BUSH. I was just going to remind the committee in speaking of these amounts and I am reminded of General Fleming's testimony last time when we met, we asked him about how many projects there would be that he could immediately work on if he had the authority intended to be given him under this bill and he said "We estimate there would be about eight projects in the category that we could complete during the fiscal year 1957; in other words, between the 1st of July of this year and June 30, 1957, there are about eight of these projects which would cost somewhere in the neighborhood of $3,200,000.

I said, "An average of about $400,000 per project?"

He said, "Yes, sir."

So, when we talk about the amount, I mean, I do not think the $500,000 is too large, Mr. Chairman.

Senator KERR. We have here a letter from General Itschner providing answers to questions which were propounded to him by Senator Bush the other day and they will be placed in the record as part of this hearing.

(The letter referred to is as follows.)

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 29, 1956.

Hon. ROBERT S. KERR,
Chairman, Subcommittee on Flood Control-Rivers, and Harbors, Committee on Public Works,
United States Senate, Washington, D. C.

DEAR MR. CHAIRMAN: In accordance with the informal request on March 22 of Senator Prescott Bush, acting chairman of the Subcommittee on Flood Control-Rivers and Harbors of the Senate Committee on Public Works, I am submitting herewith answers to questions contained in the list which you furnished me in connection with hearings on Senate bills 2853, 3272, and 3273. For convenience of reference each question or group of questions is stated, followed by the answer or appropriate reference to attached tables.

Sincerely yours,

E. C. ITSCHNER,
Major General, USA,
Assistant Chief of Engineers for Civil Works.

LIST OF ANSWERS TO QUESTIONS IN CONNECTION WITH HEARINGS ON SENATE BILLS 2853, 3272, AND 3273

Questions 1 and 2. On a nationwide basis, how many flood-control projects have been authorized by the Congress, and what is the total estimated Federal cost? How many of these projects have been completed, and at what cost?

Answers. The active authorized flood-control program of the Corps of Engineers includes 763 projects with an estimated cost of $4,800 million. Of these, 341 have been completed, construction funds have been appropriated for 96 others, and 326 projects are awaiting construction appropriations. To date, $1,600 million has been appropriated and additional appropriations of $3,200 million are required for completion.

There are 40 multiple-purpose projects not included in the foregoing whose primary function is considered to be flood control. Of these, 18 have been completed, 12 others have received construction appropriations, and 10 have yet to receive an appropriation for construction. The estimated cost of these 40 projects is $3,200 million, of which $1,500 million has been appropriated to date, leaving a balance to be appropriated of $1,700 million.

In addition, the program for flood control on the Mississippi River and tributaries has an estimated cost of $1,437 million. Including the appropriation for fiscal year 1956, $918 million has been appropriated, leaving a balance to be appropriated of $519 million.

Question 3. Assuming the Congress continued appropriation of flood-control funds at the present rate, how many years would it take to complete the presently authorized system?

Answer. At the present rate of appropriation and assuming no new projects are authorized, it will take approximately 25 years to complete the presently active flood-control program including those multiple-purpose projects with flood control as a primary function.

Question 4. The accelerated program for Northeastern States recommended by the President in the urgent deficiency bill for fiscal year 1956 and in the budget for fiscal year 1957 contemplates the construction of flood-control dams and reservoirs and local protection works.

Please list for the record the projects included in the accelerated program, and, for each project, the date of authorization, the total Federal cost, funds appropriated prior to fiscal year 1956, the appropriations for fiscal year 1956, and the appropriations recommended for fiscal 1957.

Answer. The data requested is shown on the attached table I.

Question. Assuming that Congress provides the needed funds for fiscal year 1957 and succeeding years, what is the earliest date by which this urgently needed additional flood protection for the region can be completed?

Answer. The last project in the accelerated program will be completed in fiscal year 1962.

Question. Please give the completion date for each project included in the accelerated program.

Answer. The estimated completion date for each project is shown on the attached table 1.

Question 5. How many other flood-control projects—those not included in the accelerated program—have been authorized in New England?

Answer. Fifty projects, including 3 that were constructed with ERA and CCC funds and of which 25 have been completed, 4 are under construction, and 18 are deferred and inactive.

Question. Please list for the record these projects, and, for each project the date of authorization, whether or not State and/or local concurrence has been given, the total Federal cost, and funds appropriated to date.

Answer. The data requested is shown on the attached table II.

Question 6. How many years will it take to complete the presently authorized system in New England (assuming funds are appropriated as required)?

Answer. The active program in New England will be completed in fiscal year 1962, except for Gaysville Reservoir, Vt., and Island Reservoir, Vt. State concurrence has not been received for these projects, thus they have not been scheduled for construction.

Question 7. The presently authorized system included local protection works, in addition to dams and reservoirs. Is it not true that the 1955 floods demonstrated—and tragically—the need for such protection for other communities in which no projects have been authorized to date? In Conneticut, for example, Putnam, Farmington, Torrington, Waterbury, Ansonia, Derby, Seymour, Danbury, and the lower Fairfield County towns.

Answer. The entire authorized program would not have prevented the 1955 floods but would have greatly reduced the damages, especially downstream from reservoirs. The currently authorized study will develop what additional projects and measures may be necessary and feasible to protect against or reduce the damages from flood occurrences. The schedules for the reports covering the communities listed in question 7 are as follows:

(*a*) An interim report on the Naugatuck River, a tributary of the Housatonic, scheduled for submission to this office in May 1956, will consider protection for Torrington, Waterbury, Ansonia, Derby, Seymour, and other communities by means of reservoirs or local protection works or a combination of both.

(*b*) An interim report on the Thames River, scheduled for submission to this office in fiscal year 1958, will include consideration of the problems at Putnam and other localities in the basin.

(*c*) An interim report on the Farmington River, a tributary of the Connecticut River, scheduled for submission to this office in May 1956, will consider protection by possible diversion plan, upstream reservoirs, and local protection for Winsted, Farmington, and other communities in the basin.

(*d*) A final comprehensive report on the Connecticut River Basin which will include consideration of the flood problems at Sudbury and other localities in the basin is scheduled for submission to this office in fiscal year 1958.

(*e*) A report on the Connecticut coastal streams will consider the communities in lower Fairfield County. Initiation of this study is scheduled for fiscal year 1957 with completion in fiscal year 1959.

Question 8. The principal project for protection of the Naugatuck Valley is the proposed dam at Thomaston, Conn. But that dam would not provide complete protection to the valley which is the major center of the Nation's brass production and a vital element in our national-defense picture. Is there any solution to the flood problem in the Naugatuck Valley except the construction of local protective works?

Answer. The studies currently under way includes consideration of additional storage as well as local protection in the Naugatuck Valley.

Question 9. Torrington and Winsted are both north of the proposed dam at Thomaston. Will not local protection be essential for both of those communities?

Answer. Torrington is in the Naugatuck Basin and upsteam reservoirs storage as well as local protection is being considered. Winsted is in the Farmington River Basin and various means of protection of that community are being considered in an interim report on that basin. (See 7(c).)

Question 10. Under present procedures—recommendations based on studies by the corps, authorization bills and appropriations for each specific project—

how long a period of time would elapse before local protection could be provided communities, such as those in Connecticut, for which no projects are presently authorized?

Answer. The elapsed time that would occur before local protection could be provided communities, such as those in Connecticut for which no projects are presently authorized, is highly variable, being dependent upon many factors. Assuming there are no severe delays and reasonably good progress is possible, from 3 to 5 years after completion of the study might be a fair estimate.

Question 11. The 1955 floods disclosed gaps in the presently authorized flood-control system for New England, the Northeastern States generally. This committee, on September 14 adopted a resolution, later expanded, authorizing a survey to determine what modifications or additions to the authorized system are needed in the light of the 1955 floods.

Answer. The first interim reports, consisting of reports on the Naugatuck, Farmington, and Westfield Rivers are expected to be submitted to the Congress in the fall of 1956. The final report of the New England streams is scheduled for completion is fiscal year 1960 and for streams in the Northeast States other than New England in fiscal year 1959. All schedules are subject to receipt of necessary funds to carry on a realistic program of investigation.

Question 12. In view of the increasing frequency of hurricanes, how does the corps appraise the danger of new floods in the Northeast in the present year, and in 1957, and 1958?

Answer. A number of severe hurricanes are known to have affected the Northeastern States prior to 1938 and it is likely that many severe storms in these areas not previously associated with hurricane events could be shown to be related thereto. Since 1938, eight severe hurricanes have struck the Northeast and caused tremendous property damage and considerable loss of life. The heavy rainfall associated with the hurricane of August 17–20, 1955, although not greatly in excess of the total amounts recorded in the September 1938 storm, fell on saturated soil in about one-half the duration of the 1838 storm. Record floods occurred on all medium- and small-sized streams within the central zone of the heavy rainfall area. Many small private dams failed, supplying an additional impact to the already severe flooding. The maximum published rainfall during the period August 17-20, 1955, was 19.75 inches at Westfield, Mass. The floods were of major proportions in a broad arc from south of Philadelphia to Boston. Severe flooding in Pennsylvania occurred in the Pocono Mountains region and in the southwestern part of the Catskill Mountains region. The greatest rainfall occurred in a band along the southern third of Massachusetts and in northwestern Connecticut. New maximum stages and discharges were determined at many gaging stations, some of the stations having relatively long records. The floods were outstanding with respect to the large geographic area covered by floods of such magnitude; the extensive damage and loss of life ranking with the greatest recorded in this country; the degree to which prior records were exceeded; and the distribution which was such that the greatest floods occurred predominantly on the smaller streams. Economics and flood frequency studies are being revised, to incorporate this occurrence in the evaluation and design of flood-control works.

Question 13. In clearing the channels of the Naugatuck and other rivers in Connecticut, the corps has deposited earth and rock spoil on the banks in the form of dikes. Can these structures be made permanent and effective flood-control works within the limitation of $150,000 on individual projects now contained in section 205 of the Flood Control Act of 1948 and section 212 of the Flood Control Act of 1950?

Answer. None of those structures can be made permanent within the limitations of $150,000 on individual projects now contained in sec. 205 of 1948 Flood Control Act and sec. 212 of the 1950 Flood Control Act. The material excavated from the streams was shaped, in general, to resemble a dike, and every effort was made to remove debris and other objectionable matter from the spoil. However, there is no certainty that all debris, etc., was removed, and the spoil should be investigated before it is incorporated within a permanent structure. Furthermore, most of the excavated material is of a pervious nature, and would require a cutoff trench along the riverside toe and an impervious blanket on the riverside slope. The impervious material would have to be hauled in from quite a distance. In addition, stop-log structures would have to

be constructed at certain locations. Although this material is deposited along the bank of the streams, most of it would have to be reshaped and realigned into permanent structures. To provide permanent and effective flood-control works out of this embankment would cost in excess of $150,000 for any individual unit.

Question 14. If they are not made permanent, is there not a strong likelihood that another flood or floods will wash them down the river, resulting in a loss of funds already expended?

Answer. Yes. During another flood or floods, some of this stockpiled embankment could be washed downstream.

Question 15. Public Law 71, 84th Congress, authorized the Corps of Engineers, in cooperation with the Weather Bureau and other Federal agencies, to undertake a study of hurricanes. Please describe how the corps is conducting that study, and what progress has been made to date? When can the committee expect initial recommendations based on that study? And when will the entire study be completed?

Answer. Public Law 71, 84th Congress, approved June 15. 1955, authorized a study of the coastal and tidal areas along the eastern and southern seaboards of the United States with respect to hurricanes, with particular reference to areas where severe damages have occurred. The study is to include the obtaining of data on the behavior and frequency of hurricanes and the determination of methods of forecasting their paths and improving warning services, and of possible means of preventing loss of human lives and damages to property with due consideration of the economics of proposed structures which might be required. An amount of $1 million was appropriated for this study for fiscal year 1956.

In order to provide for the best use of funds, emphasis is being placed upon investigation of those areas where severe damage has occurred and where there appears to be some likelihood of development of a feasible solution. Less seriously damaged areas are initially receiving a general appraisal with a view to determining whether further study is warranted. Areas where detailed studies are in progress include Narragansett Bay, R. I., and Mass.; New Bedford-Fairhaven, Mass.; the south shore of Long Island from Jones Inlet to Montauk Point, N. Y.; Wrightsville and Carolina Beaches, N. C.; Myrtle Beach, S. C.; Lake Pontchartrain and vicinity, La.; and Galveston, Velasco, Port Arthur, and Corpus Christi, Tex.

Since this investigation is a new field in many respects, much technical data remains to be developed. Some of the factors being studied are the characteristics and frequencies of hurricanes; improvement in hurricane forecasting, warning, and rescue services; effect of hurricanes on tide and wave buildup in both the open ocean and bay areas; and the effect of structures such as dams and barriers on water levels, currents, salinity, temperature, sedimentation, pollution, fish and wildlife, and navigation. All facilities of the Corps of Engineers, including the Beach Erosion Board and the United States Waterways Experiment Station, are being utilized. This is being supplemented by use of outside talent from universities and other consultants through contract. For example, the development of mathematical formula necessary for the determination of the maximum probable hurricane and project design hurricane tidal levels and wave heights against which protection should be provided has been contracted to a university. Full cooperation is also being maintained with the United States Weather Bureau and other Federal agencies. The Weather Bureau has certain responsibilities for hurricane research separate and apart from activities to be accomplished under Public Law 71. Full use will be made of such information and in addition the Weather Bureau is undertaking specific work assignments in connection with Public Law 71, primarily with respect to hurricane frequencies and characteristics; development of improved hurricane forecasting and warning plans; and related factors. Necessary funds for such work assignments have been transferred to the Weather Bureau by the Corps of Engineers from the funds appropriated for the overall investigation.

Three years will be required to fully complete the survey. However, interim or separate reports will be made in specific areas where such studies permit final conclusions to be reached. The first interim reports will be those on Narragansett, R. I. and Mass., and New Bedford-Fairhaven, Mass, which are expected to be submitted to the Congress early in 1957. Both these investigations are well under way. Preliminary studies are in progress to evaluate at least 12 proposals

for hurricane protection in the Narragansett area and at least 7 proposals in the New Bedford area. These preliminary studies will eliminate the more costly and less effective proposals. Among structures being considered are rock barriers, and earth dikes and dams with rock toes and slopes. Construction of a model of the Narragansett Bay area is nearing completion at the United States Waterways Experiment Station at Vicksburg, Miss., and limited tests under low-flow conditions have been started. Collection of field data and hydrographic surveys are also in progress. Information developed in connection with the studies in the aforementioned two areas will be used where applicable for other study areas along the eastern and southern seaboards of the United States. Although the investigations in the other areas have not progressed to the same extent as Narragansett and New Bedford, they are being prosecuted to the maximum practicable degree. It is expected that the first interim reports on the other areas will reach the Congress shortly after the Narragansett and New Bedford reports, with the remainder following at intervals through 1957, 1958, and into 1959 when the overall comprehensive report will be submitted.

TABLE I. *Accelerated program for Northeastern States*

Project	Date of authorization	Estimated completion date (fiscal year)	Total estimated Federal cost	Total appropriation prior to fiscal year 1956	Appropriation contained in regular bill fiscal year 1956	Appropriation contained in Urgent Defense Appropriations Act fiscal year 1956	Appropriation recommended for fiscal year 1957	Balance to complete after fiscal year 1957
Thomaston Reservoir, Conn	1944	1960	$16,000,000	$25,000		$140,000	$360,000	$15,475,000
East Brimfield Reservoir, Mass	1941	1959	5,700,000	70,000		140,000	340,000	5,150,000
Hodges Village Reservoir, Mass	1941	1959	4,350,000			140,000	360,000	3,850,000
Worcester, Mass	1944	1960	5,210,000	70,000		60,000	840,000	4,240,000
Endicott, Johnson City and Vestal, N. Y	1954	1959	4,840,000		$100,000	80,000	1,030,000	3,630,000
Allentown, Pa	1946	1959	2,130,000	90,000		60,000	70,000	1,910,000
Bethlehem, Pa	1946	1961	8,150,000			50,000	90,000	8,010,000
Dyberry Reservoir, Pa	1948	1960	7,630,000	128,000		125,000	600,000	6,777,000
Stillwater Reservoir, Pa	1941	1960	9,200,000	80,000		120,000	600,000	8,400,000
East Barre Reservoir (modified), Vt	1944	1959	3,750,000	83,000		39,000	800,000	2,828,000
North Hartland Reservoir, Vt	1938 1941	1961	10,800,000	29,000		140,000	300,000	10,331,000
North Springfield Reservoir, Vt	1941	1961	9,900,000	9,000		140,000	500,000	9,251,000
Prompton Reservoir, Pa	1948	1959	5,860,000	167,000		100,000	550,000	5,043,000
Rutland, Vt	1936 1941 1944	1960	4,530,000	82,000		28,000	100,000	4,320,000
Townshend Reservoir, Vt	1948 1954	1961	10,800,000	71,000		140,000	420,000	10,169,000
Waterbury Reservoir (modified), Vt	1944	1957	860,000	9,000		43,000	808,000	
Wrightsville Reservoir (modified), Vt	1944	1958	2,660,000	45,000	40,000	41,000	1,000,000	1,534,000
Barre Falls Reservoir, Mass	1941	1958	2,680,000	234,000		300,000	1,150,000	996,000
Buffumville Reservoir, Mass	1941	1958	2,820,000	140,000	55,000	100,000	1,200,000	1,325,000
Otter Brook Reservoir, N. H	1954	1959	4,800,000	100,000	160,000	100,000	1,250,000	3,190,000
Bear Creek Reservoir, Pa	1946	1961	17,900,000	512,000		300,000	2,250,000	14,838,000
Ball Mountain Reservoir, Vt	1944	1960	16,600,000	490,000		300,000	2,300,000	13,510,000
Woonsocket, R. I	1944	1959	4,431,000	25,000	100,000	150,000	600,000	3,556,000
Waterbury (local protection), Vt	1941	1961	3,430,000				100,000	3,330,000
Hopkinton-Everett Reservoir, N. H	1936	1962	33,020,000	67,000			600,000	32,353,000
Total			198,051,000	2,526,000	455,000	2,836,000	18,218,000	174,016,000

Other projects under construction in northeastern States:								
Adams, Mass.	1941	1958	6,345,000	1,404,000	1,900,000		1,976,000	1,065,000
North Adams, Mass.	1936 1941	1960	16,200,000	1,183,000	750,000		2,000,000	12,267,000
Kettle Creek Reservoir, Pa.	1954	1961	16,700,000		40,000		95,000	16,565,000
Swoyersville-Forty Fort, Pa.	1936	1957	3,750,000	1,795,000	400,000		625,000	930,000
Anacostia River, D. C. and Md.	1950	1957	5,610,000	1,178,000	2,750,000		1,682,000	
Cumberland, Md. and Ridgeley, W. Va.	1936 1946	1958	14,900,000	5,339,000	1,400,000		3,400,000	3,761,000
Total			63,505,000	11,899,000	7,240,000		9,778,000	34,588,000

TABLE II.—*Projects in New England not included in accelerated program*

Project	Date of authorization	State or local concurrence given	Total estimated Federal cost	Funds appropriated to date
COMPLETED PROJECTS				
East Hartford, Conn	1938	Not applicable since these are completed reports.	$2,135,000	$2,135,000
Hartford, Conn	1938	do	6,457,000	6,457,000
Winsted, Conn	1941	do	172,000	172,000
Mansfield Hollow Reservoir, Conn	1941 1944	do	6,384,000	6,384,000
Chicopee, Mass	1938	do	1,434,000	1,434,000
Fitchburg, Mass		do	[1] 1,370,000	[1] 1,370,000
Haverhill, Mass		do	[1] 1,750,000	[1] 1,750,000
Holyoke, Mass	1938	do	3,418,000	3,418,000
Lowell, Mass	1938	do	490,600	490,600
Northampton, Mass	1938	do	960,000	960,000
Riverdale, Mass	1941	do	1,137,400	1,137,400
Springfield, Mass	1938	do	932,000	932,000
Springdale, Mass	1941	do	700,000	700,000
West Springfield, Mass	1938	do	1,579,000	1,579,000
Birch Hill Reservoir, Mass	1938	do	4,167,000	4,167,000
Knightville Reservoir, Mass	1938	do	3,217,000	3,217,000
Tully Reservoir, Mass	1938	do	1,548,000	1,548,000
Nashua, N. H	1938	do	270,000	270,000
Blackwater Reservoir, N. H	1936	do	1,320,000	1,320,000
Edward McDowell Reservoir, N. H	1936	do	2,017,000	2,017,000
Franklin Falls Reservoir, N. H	1936	do	7,921,800	7,921,800
Surry Mountain Reservoir, N. H	1938	do	1,731,300	1,731,300
Lamoille River, Vt	1936	do	49,800	49,800
Union Village Reservoir, Vt	1936 1938	do	4,003,000	4,003,000
Winooski River, Vt		do	[2] 4,897,400	[2] 4,897,400
Total			60,061,300	60,061,300
ACTIVE PROJECTS				
Norwich, Conn	1941	Yes	1,300,000	1,300,00
Folly Brook (Hartford), Conn	1950	do	370,000	370,000
Adams, Mass	1941	do	6,345,000	3,304,000
North Adams, Mass	1936 1941	do	16,200,000	1,933,000
Gayesville Reservoir, Vt	1936 1938	No	18,100,000	0
Island Reservoir, Vt	1944	do	4,370,000	0
Victory Reservoir, Vt	1936 1938	Yes	3,900,000	103,000
Total			50,585,000	7,010,000
DEFERRED PROJECTS [3]				
Claremont Reservoir, N. H	1938	No	13,000,000	207,000

[1] Constructed with ERA funds.
[2] Constructed with ERA and CCC funds.
[3] The total estimated cost for projects in deferred and inactive categories are based on 1954 prices.

TABLE II.—*Projects in New England not included in accelerated program*—Con.

Project	Date of authorization	State or local concurrence given	Total estimated Federal cost	Funds appropriated to date
INACTIVE PROJECTS				
Andover Reservoir, Conn.	1941 1944	do	4,900,000	0
South Coventry Reservoir, Conn.	1941 1944	do	10,100,000	96,000
Chicopee, Mass (uncompleted unit)	1938	do	304,000	0
North Andover-Lawrence, Mass.	1938	Has not been requested	1,680,000	20,000
West Brookfield Reservoir, Mass.	1941	No	8,990,000	67,000
West Hill Reservoir, Mass.	1944	do	2,920,000	83,000
Westville Reservoir, Mass.	1941	Yes	5,890,000	79,000
Alternate Sugar Hill Reservoir, N. H.	1936	No	6,885,000	0
Honey Hill Reservoir, N. H.	1941	do	4,060,000	92,000
Mountain Brook Reservoir, N. H.	1936	do	774,000	57,000
West Canaan Reservoir, N. H.	1938 1941	do	9,060,000	92,000
Pawtucket, R. I.	1944	Had not been requested for modified project.	202,000	0
Bennington, Vt., local protection	1936	No	1,450,000	0
Lamoille River (uncompleted unit), Vt.	1936	do	203,000	50,000
Proctor, Vt.	1936	do	119,000	0
Brockway Reservoir, Vt.	1941	do	10,700,000	0
Cambridgeport Reservoir, Vt.	1941	do	5,170,000	0
Ludlow Reservoir, Vt.	1941	do	5,690,000	0
South Tunbridge Reservoir, Vt.	1937 1938	do	5,440,000	0
Total			84,537,000	636,000
Grand total			208,183,300	67,914,300

Senator KERR. Any further questions of General Itschner?

(There was no response.)

Senator KERR. Any further statement, General?

General ITSCHNER. No, sir; thank you.

Senator KERR. Thank you very much for your appearance and your help.

Mr. WILLIAMS. Donald A. Williams, Administrator, Soil Conservation Service, Department of Agriculture.

STATEMENT OF DONALD A. WILLIAMS, ADMINISTRATOR, SOIL CONSERVATION SERVICE, DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY CARL B. BROWN, DIRECTOR, PLANNING DIVISION, SOIL CONSERVATION SERVICE, DEPARTMENT OF AGRICULTURE

Mr. WILLIAMS. Mr. Chairman, I have a short statement here and if it is agreeable to the committee I will proceed with it.

Senator KERR. Very good.

Mr. WILLIAMS. This statement is in response to the letter of the chairman of the committee to the Secretary of Agriculture on March 13.

We appreciate the opportunity of appearing before your committee to review the programs of watershed protection and flood prevention administered by the Department of Agriculture and their interrelationship to the bills before you, S. 2853, S. 3272, and S. 3273.

Senate bills S. 3272 and S. 3273 reconfirm the authority of the Chief of Engineers under the direction of the Secretary of the Army to undertake small flood-control projects not specifically authorized by law in any area of the United States. They increase the amount that can be allotted for any single project during any one fiscal year from $150,000 to $500,000. S. 3272 increases the total amount that may be so allotted for any one fiscal year from $3 million to $15 million. S. 3273 increases this amount from $3 million to $20 million.

S. 2853 limits the additional authority of the Chief of Engineers to projects in New England, Pennsylvania, and New York, and limits the total amount that may be allotted for any one fiscal year to $10 million.

The 3 bills require that, for any projects estimated to cost in excess of $150,000 for any one fiscal year, the Secretary of the Army shall submit to the Committee on Public Works of the Senate and the Committee on Public Works of the House of Representatives a report outlining the proposed plan of protection together with an analysis of the justification therefor. No work shall be initiated on any project or other measures with respect to which such a report is made until the expiration of the first period of 30 days of continuous session of the Congress following the date on which the report is transmitted to the committees. No action or consideration by the Congress or its committees is required for projects costing less than $150,000 for any one fiscal year.

The Department of Agriculture, Mr. Chairman, administers the Watershed Protection and Flood Prevention Act of 1954—Public Law 566, 83d Congress. This act provides, among other things, for Federal assistance to local organizations in the installation of both land treatment and structural measures for flood prevention. The Congress in enacting Public Law 566 recognized the essential interrelationship between proper use and conservation treatment of farm, range, and forest lands and the construction of structural measures for flood protection. We recognize, of course, that local protection works, such as levees around urban areas, may not be significantly affected by the condition of watershed lands above the site of such protection. The design, operation, and maintenance of small flood-control reservoirs is, however, very materially affected by the use and treatment of watershed lands. The Department of Agriculture is dedicated to the proposition that proper land use and treatment is an essential and inseparable complement to the construction of headwater reservoirs.

Certain other differences exist between the requirements under these bills and the requirements under the Watershed Protection and Flood Prevention Act of 1954. In this act, plans for works of improvement must be before the Congress for 45 days before installation involving Federal assistance is commenced, and such plans including structures with capacities in excess of 2,500 acre-feet must be approved by reso-

lutions of the Committee on Agriculture and Forestry in the Senate and the Committee on Agriculture in the House of Representatives before appropriations shall be made for any plan for works of improvement.

The provisions of the bills relating to cost sharing are referenced to section 3 of the Flood Control Act of 1936 which requires at the most that local interests (1) provide without cost to the United States all lands, easements, and rights-of-way necessary for the construction of the project; (2) hold and save the United States free from damages due to the construction works; and (3) maintain and operate all the works after completion in accordance with regulations prescribed by the Secretary of the Army.

The Watershed Protection and Flood Prevention Act of 1954 requires local organizations not only to assume the cost of land, easements, and rights-of-way, operation and maintenance, water rights, and administration of contracts, but in addition to assume such proportionate share of the cost of installing any works of improvement involving Federal assistance as may be determined by the Secretary of Agriculture to be equitable in consideration of anticipated benefits from such improvements.

Local organizations must also obtain agreements to carry out recommended soil conservation measures and proper farm plans from owners of not less than 50 percent of the lands situated in the drainage area above each retention reservoir to be installed with Federal assistance.

The Department is pleased to report to this committee briefly on progress being made under the various watershed-protection and flood-prevention programs which it administers.

First, I would like to talk about the 11 watersheds authorized under the Flood Control Act of 1944.

The Flood Control Act of 1936 was the first Federal law to recognize the need for watershed protection and management as a principal means of flood control. Responsibility for making surveys and investigations and for carrying out works of improvement for "upstream flood control" was assigned to the Secretary of Agriculture. Although numerous surveys were made prior to World War II, this program was suspended during the war and the first works of improvement were authorized by the Flood Control Act of 1944 on 11 watersheds.

The authorized works included an extensive program of assistance to landowners and operators in the use and treatment of their lands, in protection and management of federally owned lands in the watershed, and the construction of small structures for runoff retardation and sediment control. Installation of works of improvement was started in 1947 and has been underway since that date.

The original survey reports on these 11 watersheds, embracing 30 million acres of land, have been revised and brought up to date. Actual planning is carried out in cooperation with local organizations on subwatersheds within the larger authorized watersheds. The authorized improvements range from 10 to 50 percent complete. Up to the end of the current fiscal year, about $59 million of Federal funds will have been obligated in carrying out this program. This repre-

sents about 60 percent of the cost to date, the other 40 percent having been contributed by landowners in the form of application of land-treatment measures, provision of land, easements, and rights-of-way for structures, and related costs.

Now I would like to speak about the pilot watershed program.

The second Federal action came in 1953 when Congress appropriated $5 million with which 60 pilot watershed projects covering about 3 million acres in 34 States were started. One objective was to demonstrate the benefits of combining soil and water conservation on the land with upstream flood-prevention structures. The other was to find out the best ways to achieve local-State-Federal teamwork in planning and carrying out watershed protection and development.

Senator KERR. Mr. Williams, do you have available a tabulation of the projects, the amount that has been spent by the Government to date and an estimate of the amount it will cost to complete them?

Mr. WILLIAMS. We can supply that for the record if we do not have it here with us, Mr. Chairman.

Senator KERR. We would appreciate that.

When that is furnished it will be placed in the record at this point.

(The tabulation referred to is as follows:)

UNITED STATES DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE,
Washington 25, D. C., April 4, 1956.

HON. ROBERT S. KERR,
Chairman, Subcommittee on Flood Control—Rivers and Harbors, Committee on Public Works,
United States Senate

DEAR SENATOR KERR: In response to your request at the hearings before your subcommittee held on March 29, 1956, we are submitting, for your record of the hearings, a tabulation of the pilot watershed protection projects authorized by the Appropriation Act of 1954 for the Department of Agriculture. We have shown for each project the total amount of Federal funds made available through June 30, 1956, and the estimated total project cost. The latter column contains the sum of Federal and non-Federal contributions to the project which, although not finally fixed for each project, are expected to represent a Federal contribution of no more than 50 percent to the total cost of the program.

Sincerely,

D. A. WILLIAMS, *Administrator.*

Watershed protection projects (pilot)—total Federal available and estimated total cost

Watershed and location	Total Federal available through June 30, 1956	Estimated total cost [1]
Adobe Creek, Calif.[2]	$50,008	$50,008
Aiken Creek, Kans., Bee Creek Site No. 1, Kans	104,519	207,443
Baboosic River, N. H	44,766	187,942
Ball Creek, N. Y	51,470	134,315
Bill's Creek, Kans.[2]	20,972	20,972
Brownell Creek, Nebr	214,221	1,017,833
Kiowa Creek, Colo	295,064	1,261,925
Calaveras Creek, Tex	374,701	1,245,296
Calleguas Creek, Calif	945,454	5,439,773
Chippewa River tributaries and Hawk Creek, Minn	359,705	2,224,002
Cory Creek, Pa	58,506	304,328
Cow Bayou, Tex	502,855	2,377,855
Dean Creek, N. Y	117,304	181,193
Double Creek, Okla	350,065	630,745
Dry Creek, Idaho	107,759	447,126
Dry Creek, Nebr	164,064	757,823
East Willow Creek, Minn	135,778	388,287
East Fork of Falling River, Va	159,419	473,500
East Branch of South Fork of Blackwater, Mo	207,201	584,073
Escondido Creek, Tex	629,161	1,438,206
Flat Creek, Ind	150,104	647,648
Floyd River, tributaries, Upper Plymouth Creek, and Nassau, Iowa	28,350	297,028
Great Brook, N. Y	62,264	278,810
Green Creek, Tex	1,010,732	1,746,539
Hadley Creek, Ill	350,335	2,045,761
Honey Creek, Iowa	203,666	470,517
Indian Creek, Nebr	410,997	1,608,892
Little Delaware-Mission Creeks, Kans	342,798	999,273
Little Hoosick above Berlin, N. Y. and Mass	148,873	718,692
Lost Creek, Mo	146,441	433,639
Lost Creek, Kans	63,467	408,685
Mission Creek, Wash	200,502	403,814
Money Creek, Ill	36,471	436,510
Mule Creek, Iowa	432,324	722,083
Muster Creek, Mont.[2]	8,622	8,622
North Fork of the Broad River, Ga	429,661	1,341,160
North Fork of the Rough River, Ky	193,877	744,075
Old Tom Creek, Ill	177,529	419,228
Pequest above United States Gaging Station, N. J	439,751	1,156,549
Pleasant Creek, Utah	258,011	455,687
Plum Creek, Ky	313,541	997,096
Red River, upper, Ky	304,120	1,247,074
Rocky Fork-Clear Creek, Ohio	94,697	405,663
Salem Fork of Ten Mile Creek, W. Va	242,810	460,700
Sandia Mountain tributary-Bernalillo watershed, New Mexico	132,096	163,906
Santaquin, Utah	91,688	135,820
Scott watershed, S. Dak	124,416	178,729
Six Mile Creek, Ark	1,506,803	3,227,701
Snipe Creek, Kans	141,218	464,298
Spring Valley Creek, Wash.[2]	4,293	4,293
Switzler Creek, Kans	169,041	591,470
Third Creek, N. C	352,643	1,544,900
Tongue River, N. Dak	537,859	3,812,525
Twelve Mile Creek, S. C	419,677	2,243,132
Upper Green, Ky	266,283	708,176
Upper Hocking River, including Hunter's Run, Ohio	357,540	1,313,325
Upper Hondo, tributaries of, N. Mex	245,840	1,093,180
Upper Salt-Swedeburg tributaries of Salt Creek, Nebr	616,236	4,046,696
Walnut Creek, Calif	1,233,508	6,012,549
West Fork of Kickapoo, Wis	150,127	319,163
White Tanks, Ariz	213,671	437,287
Wolf River tributaries, Mary's and Sand Creeks, Tenn	263,039	942,975
Total	17,768,913	65,066,605

[1] This includes the sum of the estimated Federal and non-Federal contributions to the projects. The total Federal cost authorized in 1953 was $28,706,000. This amount may be exceeded by 10 percent or more due to rising cost and changes in plans.

[2] Discontinued at the request of sponsoring local organization.

Mr. WILLIAMS. The total cost of the program on the 58 currently active pilot watersheds is about $60 million of which approximately one-half is Federal. Cost sharing satisfactory to the local sponsors and the Federal Government has been developed in the final work plans for the 58 active projects, most of which will be completed within another 2 to 3 years.

Installation of the works of improvement is generally on schedule in most watersheds and in some watersheds is substantially ahead of schedule.

Some installations have been made and procedures established to evaluate the effectiveness of the program in each of the 58 active watersheds. Eight of them have been selected for a more intensive evaluation. The Soil Conservation Service has secured the assistance of the United States Geological Survey, the Weather Bureau, and the Agricultural Research Service by cooperative agreement to assist with the evaluations. This work is proceeding satisfactorily.

Senator BUSH. What is the nature of these installations—these 58 installations? Can you give us any picture typical——

Mr. WILLIAMS. They vary considerably, Senator, in different projects, in different parts of the country.

For example, one project in Arizona, that I recall, is a sediment structure to protect irrigated lands and the irrigation canals located below. Most of the sediment affecting irrigation comes off publicly owned land. That same structure provides temporary flood retardation by regulating flow through an orifice tube so that the waterways below can handle the flow in flash storms.

Senator BUSH. That is a typical project of that nature?

Mr. WILLIAMS. That would be somewhat typical in that particular section of the country.

Now, in Mr. Hruska's home State of Nebraska, the pilot projects in that area such as the one near Beatrice, the Indian Creek project, consists of, as I recall it, around 57,000 acres, some 320 farm ownerships. The program there consists of a complete conservation treatment of the land involving the use of vegetation, terraces, and waterways and so forth, plus a few supplemental, small structures for temporarily detaining flood waters and releasing it into the waterways below them.

The program as a whole varies from one watershed to another depending upon the desires of the local organizations.

Senator BUSH. Could you tell me, off-hand, what the nature of the first soil-conservation project involving flood control up in the town of Windsor area in Connecticut, do you happen to know what the nature of that project is? I see that the Department has recently approved this first project in that area.

Mr. WILLIAMS. Yes, I believe that that refers to the next item here, the watershed protection and flood prevention act rather than the pilot program.

Senator BUSH. I see.

Mr. WILLIAMS. I would like to ask Mr. Brown if he has information here available on that particular project?

Mr. BROWN. Yes, sir. That project which has been approved for planning and on which planning has been started, Senator, is known as the Meadow Decker and Mill Brooks watershed, an area of 7,786

acres in Hartford County. That has just been authorized on March 21 for developing a project for the planning phase of it.

Senator BUSH. You could not give me an idea as to what type of project that would be?

Mr. BROWN. Well, the local people there are seeking conservation treatment of the land and flood prevention and the investigations will relate to what land treatment measures are needed, the possible justification for small retarding structures, stream bank stabilization and related measures of that type for water management.

Senator BUSH. When you speak of land treatment, do you include the planting of trees and that sort of thing? Does that come under your definition of land treatment?

Mr. BROWN. Yes, sir.

Mr. WILLIAMS. Might I explain further, Senator, that this Watershed Protection and Flood Prevention Act administered by the Department of Agriculture is participated in by the United States Forest Service and the State foresters and where forest lands are involved, whether that be national forests or substantial private forests, the State foresters and the United States Forest Service are concerned with that, where there is tree planting or management of that sort of an area.

Senator BUSH. Thank you very much.

Senator HRUSKA. Mr. Chairman, I am going to have to attend another meeting, I am wondering if at this point I could ask a question or two of the witness.

Senator KERR. Yes.

Senator HRUSKA. Mr. Williams, what comment would you have to make on the sometimes occurring conflict in the area of these small watersheds and small projects that sometimes conflict which arises as between the Corps of Engineers and the Soil Conservation Service? Instances have come to our attention where a locality will prefer the Corps of Engineers because they do the work for free, whereas you folks have a formula built into the statute where a contribution is required of those who are benefited by the project involved.

Is there anything that you can tell the committee here which might be helpful either in eliminating that area of conflict and direction or of making it easier to administer? We find it quite troublesome, sometimes.

Mr. WILLIAMS. I would be glad to comment on that, Senator. With regard to the Watershed Protection and Flood Prevention Act of 1954 the precedent to it was these pilot experimental watersheds. We are just getting under way in the last year and a half under this Watershed Protection Act of 1954, and, of course, that act places limitations, first on the size of the watershed. Two hundred fifty thousand acres is the maximum size of the watershed that may be included in any specific watershed proposal or work plan.

It also places a limitation of 5,000 acre-feet as the maximum size of structure that can be included in any such work plan——

Senator HRUSKA. In any one structure?

Mr. WILLIAMS. That is right.

Now, moreover, as I indicated in my testimony, there is also additional requirement that any structure storing more than 2,500 acre-feet must have the favorable action of the congressional committees

before funds can be used for its construction. So, there is a maximum 5,000 acre-foot limitation.

Now, in proceeding with this work I think that is absolutely essential that there be a very close working relationship wherever there are interests involved of the Corps of Engineers and the Department of Agriculture on the same watershed. I think that that needs to be worked out with the local organizations because under the watershed Protection Act these are not Federal projects as they are under the Corps of Engineers' program. These are local projects which must be initiated by the local people in which the Federal Government merely assists in a technical or financial way, so, there is that difference of authority, one being a local project, one being a Federal project. But, irrespective of that, to the extent that the Federal agencies are working in the watershed or have interests in the watershed, it seems to us that the most desirable approach is a joint working together during the process of planning the program, so that there can be the maximum of harmony in the program proposals from the very beginning and I think that that is gradually evolving with the experience under this watershed program.

There have been questions, we have had lots of discussions and work-plan meetings both in the field and here in Washington, and I feel very confident that a tremendous amount of progress has been made.

For example, it is my understanding that the Chief of Engineers has recently issued a policy statement having to do with the small structures which would be comparable in size or nature to some that might be in a watershed program, that the cost-sharing policy the Corps of Engineers would follow would be similar to that of the Department of Agriculture, so that there would not be two differing policies on that same problem.

Senator HRUSKA. But, you would say that as experience is gained in this field you are finding it easier to get along with the different views that are found in the one statute and in the other?

Mr. WILLIAMS. Very definitely so. Of course, there is pending before the Congress at this time some legislation which is being considered for the amendment of the Watershed Protection Act which in some respects is similar to the sort of thing you are discussing here this morning in these bills. The size of the job that would not require congressional clearance, is one point, and another is having to do with the cost sharing on the small structures. We do not know what the final outcome of that legislation will be.

Senator HRUSKA. Thank you, Mr. Williams.

Senator BUSH. Is not there some difference, though, based on the fact that the Federal Government has control of navigable streams and of navigation and that is the reason in connection with these works on our streams that the Federal Government does assume the burden whereas——

Senator KERR. The experience of the Flood Control Act is that flood control is a Federal responsibility with reference to which projects are nonreimbursable. The experience and theory of the acts referred to by the witness——

Senator BUSH. Does it not revolve around that point, Senator, I am really asking——

Senator KERR. Not around navigable streams; no, not at all.

Senator BUSH. It does not?

Senator KERR. No, not at all. In fact, improvement of navigable streams is entirely a separate principle than flood control. Flood control is available on navigable streams——

Senator BUSH. Yes.

Senator KERR. (Continuing)—but not as a part of the principle of Federal responsibility with reference to navigable streams.

Senator BUSH. I thought that one influenced the other, so to speak. The reason that the Federal Government would reach up into these little streams which connect with the navigable streams, it was because of the Government's responsibility for the streams and the navigation on the streams, is that not the background of it?

Senator KERR. The principle of Federal responsibility with reference to the navigable streams, as I understand it, relates back first to the Federal ownership of them.

Senator BUSH. Yes.

Senator KERR. Second is the regulatory power of the Congress with reference to interstate commerce.

Senator BUSH. Yes.

Senator KERR. But flood control where the navigable stream proposition goes back to the beginning of the Republic. I would say that the flood-control principle and the Federal responsibility in that connection is comparatively of very recent origin, Senator.

Senator BUSH. I see.

I have no further questions.

Senator KERR. You may proceed with your statement, Mr. Williams.

Mr. WILLIAMS. Thank you.

The Watershed Protection and Flood Prevention Act, Public Law 566, 83d Congress, approved August 4, 1954, authorizes the Secretary of Agriculture to assist local organizations in planning and carrying out works of improvement for flood prevention or the agricultural phases of the conservation, development, utilization, and disposal of water. The act places the entire responsibility for initiating and carrying out projects on local organizations authorized by State law to carry out, maintain and operate works of improvement. The role of the Federal Government is strictly one of assistance to local organizations after they have applied to the Secretary of Agriculture for such assistance and the application has not been disapproved by the Governor or a State agency designated to act on applications.

The order in which the projects are to be planned is determined on the basis of applications submitted by interested local organizations and priority recommendations made by the Governor or the State agency designated to exercise supervisory responsibility over the program in the State.

As a result of the local determinations required by the act and the Department's inability to determine in advance those watershed areas for which local applications will be submitted, this program is not subject to the same direct controls as programs usually recognized as Federal public works. Coordination can be achieved, however, on a project-by-project basis during the time planning assistance is being made available to the local organizations. At this stage of project development, all authorized or proposed projects of other Federal, State, and local agencies are investigated to determine that the water-

shed project will not conflict with other authorized projects, constructed or about to be constructed, for flood control or related activities. The local organization and the Department keep these other agencies advised and seek their advice and consultation to assure that all developments in a specific watershed area are harmonious elements in the protection and improvement of that and adjacent areas.

Prior to reaching agreement with the local organization on a plan for works of improvement, the Secretary of Agriculture determines that the plan does not conflict with any other current projects that have been authorized in or below the watershed project area. It is our feeling that this procedure does integrate activities undertaken under the authority of the Watershed Protection and Flood Prevention Act with Federal public works for flood control and related programs concerned with water resource development.

Up to March 19, 1956, State-approved applications had been received by the Soil Conservation Service from a total of 460 watersheds in 45 States. Information from the States indicates that 310 additional applications are being processed but have not yet reached Washington. Up to March 19, the Service had approved planning assistance for 142 watersheds in 42 States, of which 117 are in the planning process. To that date, work plans have been completed and mutually agreed upon between the local organizations and the Soil Conservation Service on 25 watersheds in 17 States. All of these had been referred to the Governor of the States and other concerned Federal agencies for review and comments. Thirteen of the plans have been referred to the Bureau of the Budget for transmission to the Congress.

The other point, Mr. Chairman, in your letter of March 13, had to do with the river basin planning in the Arkansas-White-Red River Basin.

The Department of Agriculture has completed its work in connection with the preparation of reports on the New England-New York area and the Arkansas-White-Red River Basins. The parts of the overall reports prepared by the Department have been turned over to the Corps of Engineers which has the responsibility for the compilation of complete reports on these areas and their submission to the Congress.

General Itschner reported briefly on those this morning.

Senator KERR. Yes.

Mr. WILLIAMS. That completes my statement, Mr. Chairman, and if Mr. Brown or I could answer any questions we would be pleased to do so.

Senator KERR. Thank you very much for your appearance and your statement.

Off the record.

(Discussion off the record.)

Senator KERR. Senator Saltonstall, you had a statement you wished to give us?

Senator SALTONSTALL. Mr. Chairman, I would appreciate very much the opportunity of making a brief statement on this subject. Thank you, sir, for permitting me to do so.

STATEMENT OF HON. LEVERETT SALTONSTALL, UNITED STATES SENATOR FROM THE STATE OF MASSACHUSETTS

Senator SALTONSTALL. Mr. Chairman, I appreciate this opportunity to appear briefly before your committee in support of S. 3272.

In company with my Senate colleagues from New England I have already both publicly and privately urged the provision of ample funds, that is, the maximum amount which can be spent without waste, to carry forward with all possible speed and effectiveness those flood-prevention and control measures which will give the New England region more adequate protection against the ravages of hurricanes and floods.

As you know, Mr. Chairman, New England was stricken by two flood disasters in 1955. In addition, we have been warned in New England, from such sources as the United States Weather Bureau and long-range weather forecasters in several universities, that the probable increase in the frequency of hurricanes creates grave danger of possible new floods in the near future.

Finally, and most recently, the unprecedented heavy snows which have fallen on New England in the past 2 weeks pose still another flood threat if that snow should melt with any appreciable speed.

Just a few days ago I wrote to Brig. Gen. Robert J. Fleming, Jr., Division Engineer, New England Division, Boston, and sent a copy of that letter to Lt. Gen. Samuel D. Sturgis, Jr., Chief of Engineers, Washington, D. C., to ask, among other things, that they let us know promptly if emergency flood-control funds currently available to them might prove insufficient to meet such a new threat. I assured them that, in company with my Senate colleagues from New England, we would do everything we possibly and properly could to be of assistance in providing such additional funds as required.

I have not heard from that letter. I mention that, Mr. Chairman, because last weekend I was in Boston and the snow was melting very fast after an additional snowfall. The snowfall in my own home, the depth of the snow at my own home was well, almost up to my thigh; it was between my knee and thigh.

Senator KERR. Acquaintances of mine up there told me on the level it was 3 feet deep.

Senator SALTONSTALL. It is deeper than I can remember for a good many years.

As do my colleagues and all our people in New England I appreciate deeply the action of the Congress in providing funds, in the urgent deficiency bill, which made possible an immediate start on an accelerated flood-control program for our New England States. We approve and support the action which will make possible those dams, reservoirs, and related projects that are included in that program, projects for which President Eisenhower has recommended additional funds in his budget requests for fiscal 1957.

S. 3272 represents a still further extension of this effort, particularly toward the meeting of the urgent need for smaller, local flood-protection works in our region.

Our 1955 flood disasters stand out, of course, most clearly in our minds and we place primary emphasis upon the need occasioned by

them. We are, however, very much interested also in shore protection and general improvement projects in our region.

S. 3272, increasing and making certain revision, as it does in the general authorization for small flood-control projects in the Flood Control Act of 1948, represents, in my opinion, and I am sure in that of all of my colleagues, an important and practical extension of the authority we believe to be required to solve this total flood-control problem.

In support of our views, Mr. Chairman, I request permission to read to the committee excerpts from a telegram I have received from Governor Herter of Massachusetts. These excerpts are as follows:

Dear Senator: Will you, in your testimony before the Committee on Public Works, convey my urgent feelings and those of the people of Massachusetts who vigorously ask the committee's approval of the overall flood-control program submitted by the New England Governor's Conference Committee and approved by the New England congressional delegation. As you and I know, this includes the revisions and additions recommended by the United States Army Corps of Engineers following last fall's disastrous floods. Every day we put off this legislation brings us closer to the next devastation and this we cannot afford. I am most certainly in favor of your amendment proposal, S. 3272. * * *

(Signed) CHRISTIAN A. HERTER,
Governor of Massachusetts.

Mr. Chairman, thank you very much for your courtesy and for your attention.

Senator KERR. Thank you, Senator.

I will place in the record at this point a letter from Governor Roberts of Rhode Island, and the Secretary of State.

(The letters referred to are as follows:)

STATE OF RHODE ISLAND & PROVIDENCE PLANTATIONS,
EXECUTIVE CHAMBER
Providence, March 28, 1956.

Hon. ROBERT S. KERR,
Senate Office Building, Washington, D. C.

DEAR SENATOR: Enclosed is a statement in reply to your telegram of March 15 inviting me, as chairman of the New England Governors' Conference, to testify on Senate Bill 3272 and related flood-control bills.

I appreciate the opportunity to submit this statement and wish to thank the Senate Public Works Committee for their courtesy in considering New England's flood-control needs.

With kind personal regards, I am

Sincerely yours,

DENNIS J. ROBERTS, *Governor.*

STATEMENT OF THE NEW ENGLAND GOVERNORS' CONFERENCE TO THE PUBLIC WORKS COMMITTEE, UNITED STATES SENATE, CONCERNING S. 3272

During the last 2 years, New England has experienced a series of natural disasters. Since the fall of 1954, the New England Governors' Conference has devoted some part of each of its meetings to considering means of recovery and adequate protection against hurricanes and the effects of floods. As a result, we have established a close relationship with the Corps of Engineers, United States Army. We have acquired a very high regard for their ability, and we compliment the splended work of the New England division.

The New England governors also wish to express their appreciation to the Senate Public Works Committee for authorizing the Army engineers to undertake the greatly needed survey of hurricane protective devices, which is now in progress, and for authorizing many other crucial flood control projects in New England.

On the other hand, we have become far too familiar with some of the frustrations which are encountered in pursuing an effective flood-protection program. After the August 1955 floods, the New England governors were faced with an

urgent need to accelerate flood-control plans in the New England area. Despite the united efforts of the New England congressional delegation, we were unable to secure emergency flood-control funds prior to the convening of Congress in January of this year. The delay in obtaining advance planning and construction funds, in some cases, has delayed completion of flood-control projects in New England by several construction seasons.

The snowstorms which struck the Northeast last week have brought fear to the region of coming spring floods. Nature has warned us again that we must accelerate our flood-control efforts. S. 3272, which is now being considered by your committee, is well conceived to meet New England's needs. To a great extent, it will alleviate the situation which occurred after last year's floods by insuring a much-needed flexibility in programing of effective measures to meet the threat of recurring floods. The New England Governors' Conference approves the provisions of this bill which would:

(1) Authorize an appropriation of $15 million for the Chief of Engineers to spend in any fiscal year for the construction of flood-control projects not specifically authorized by law;

(2) Limit the cost of any one project to not more than $500,000; and

(3) Specify that projects in excess of $150,000 must have the approval of the Committee on Public Works of the Senate and the House.

S. 3272 would take considerable technical burden from the shoulders of Congress, subject to proper checks, and enable the Corps of Engineers to act promptly in meeting emergency needs and in undertaking projects which will have a great influence on the effectiveness of flood control in New England's river basins.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS,
DEPARTMENT OF STATE,
Providence, April 3, 1956

Hon. PRESCOTT BUSH,
Senate Office Building, Washington, D. C.

DEAR SENATOR BUSH: I am directed by the general assembly to transmit to you the enclosed certified copy of resolution (H. 1104), introduced by Representatives Lanoie, Chapdelaine and Doris, entitled "Resolution Memorializing Congress with Special Commendation to United States Senators Bush, of Connecticut, and Green and Pastore, of Rhode Island, for the Bill Sponsored by Them Which Would Enable the United States Army Corps of Engineers to Extend Flood-Control Projects for the Small Streams in New England," passed by the General Assembly at the January session, A. D. 1956 and approved by the Governor on the thirtieth day of March, 1956.

Very truly yours,

ARMAND H. COTE, *Secretary of State.*

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS IN GENERAL ASSEMBLY,
JANUARY SESSION, A. D. 1956

RESOLUTION

H. 1104: Memorializing Congress with special commendation to United States Senators Bush, of Connecticut, and Green and Pastore, of Rhode Island, for the bill sponsored by them which would enable the United States Army Corps of Engineers to extend flood control projects for the small streams of New England

Whereas a bill known as the Bush bill is pending in the Congress of the United States, sponsored by United States Senator Bush, of Connecticut, and cosponsored by United States Senators Green and Pastore, of Rhode Island, for adequate flood-control projects for the small streams in New England; and

Whereas there are vulnerable districts in Rhode Island, particularly in the social district of Woonsocket, where some new protection for the low-lying residential area might be provided by allowing the United States Army Corps of Engineers to spend appropriations on small, urgently needed flood-control projects without project-by-project authorization from Congress; and

Whereas Gen. Robert J. Fleming, Jr., New England division chief of the United States Army Corps of Engineers, has told the Senate rivers and harbors subcommittee that dams and dikes costing about $3 million at Woonsocket and 7 other

New England points could be completed by June of 1957 under the terms of the Bush bill, thereby enabling the Corps "to act almost on the spot when they see a weakness in the flood control structure of the Nation with hands not bound by red tape at a time when the lives and property of our citizens are in jeopardy:" Now, therefore, be it

Rsolved, That the General Assembly of the State of Rhode Island and Providence Plantations now commends the sponsor and cosponsors of the Bush bill, namely United States Senator Bush, of Connecticut, and United States Senators Green and Pastore, of Rhode Island, for this timely effort to present a solution to a most serious flood-control menace; directing the Senators and Representatives from Rhode Island to use every effort to have this Bush flood-control bill, so-called, become law; authorizing the secretary of state to transmit to United States Senators, Bush, Green, and Pastore duly certified copies of this resolution and also the chairman of the Senate Rivers and Harbors Subcommittee and to Gen. Robert J. Fleming, Jr., New England division chief of the Army Corps of Engineers.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

DEPARTMENT OF STATE

OFFICE OF THE SECRETARY OF STATE

I, Armand H. Cote, secretary of state of the State of Rhode Island and Providence Plantations, hereby certify that the aforegoing is a true copy of resolution (H. 1104) entitled "Resolution Memorializing Congress With Special Commendation to United States Senators Bush, of Connecticut, and Green and Pastore, of Rhode Island, for the Bill Sponsored by Them Which Would Enable the United States Army Corps of Engineers To Extend Flood-Control Projects for the Small Streams in New England," taken from the records in this office and compared with the original resolution (H. 1104) passed by the general assembly at the January session, A. D. 1956, and approved by the Governor on the 30th day of March 1956, and now remaining on file and of record in this office.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of the State of Rhode Island, this 3d day of April A. D. 1956.

[SEAL] ARMAND H. COTE, *Secretary of State.*

Senator KERR. That is all for this morning.

The committee stands adjourned.

(Whereupon, at 11:50 a. m., the committee was adjourned to reconvene at the call of the Chair.)

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